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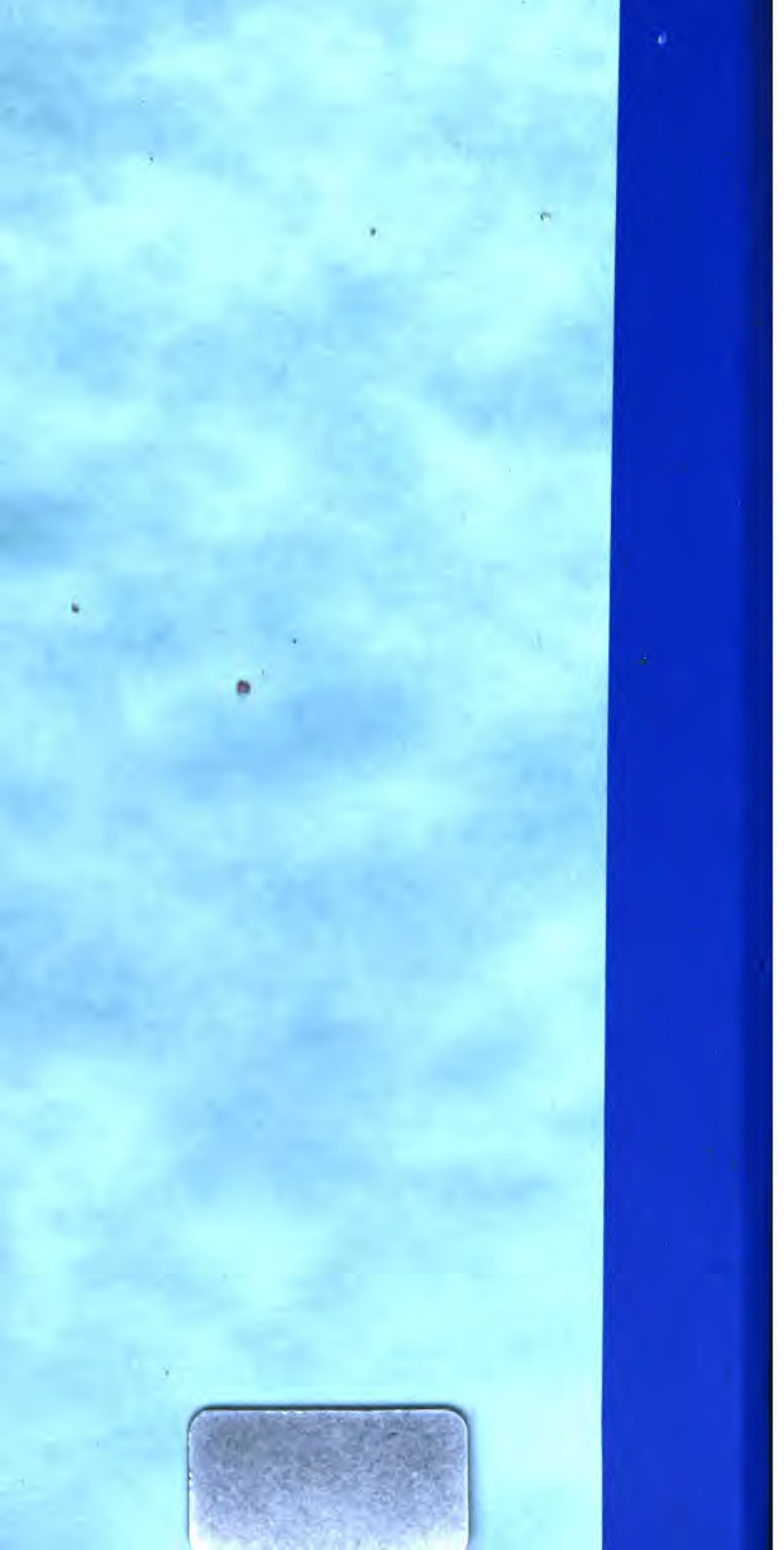
S-Au-Melbourne 1864-71

Melbourne. Acclimatisation
Society of Victoria.
Annual Report.
3rd, 1864
1871



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THE

THIRD ANNUAL REPORT

OF THE

Acclimatisation Society of Victoria

AS ADOPTED

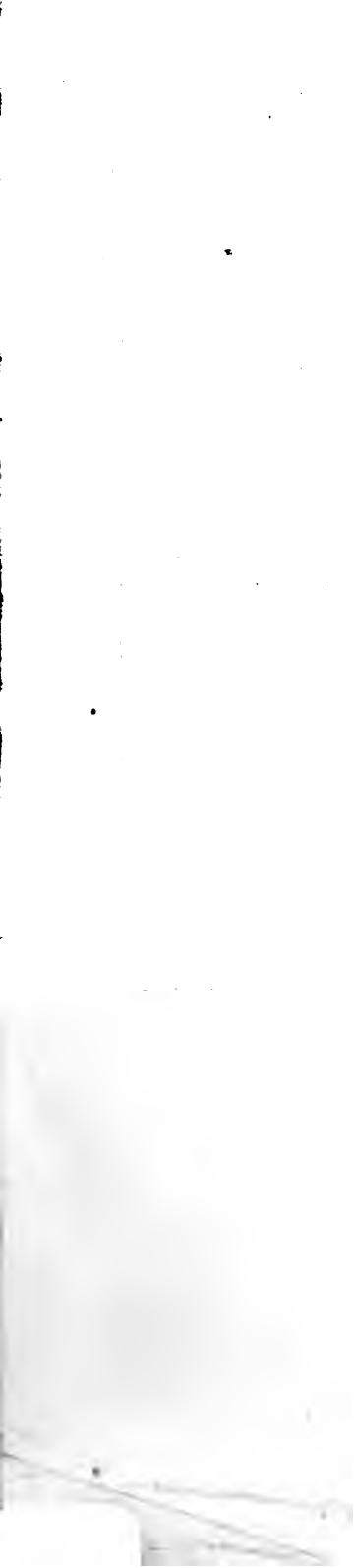
At the Annual Meeting of the Society, held November 11th, 1863,

at the Society's Office, Melbourne;

TOGETHER WITH

PAPERS READ AT THE MONTHLY MEETINGS OF THE SOCIETY.

MELBOURNE:
WILSON & MACKINNON, PRINTERS, COLLINS STREET EAST.
1864.



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1864.

LIST OF THE OFFICERS

OF THE

ACCLIMATISATION SOCIETY.

PATRON.

HIS EXCELLENCY SIR C. H. DARLING, K.C.B

COUNCIL.

PRESIDENT.

HON. W. C. HAINES.

VICE-PRESIDENTS.

THOMAS BLACK, ESQ., M.D., &c., &c.
FERDINAND MUELLER, ESQ., M.D., F.R.S., &c., &c

COMMITTEE.

S. H. BINDON, ESQ., M. .A.
DR. JOSEPH BLACK.
D. S. CAMPBELL, ESQ.
COMTE DE CASTELNAU.
H. J. CHAMBERS, ESQ.
LIEUT.-COLONEL CHAMP.
G. S. LANG, ESQ.
THOMAS LOADER, ESQ.,
W. LYALL, ESQ.
PROFESSOR M'COY.
DR. MADDEN.
HON. A. MICHIE, Q.C., M.L.A.
ALBERT PURCHAS, ESQ.
A. R. C. SELWYN, ESQ.
JAMES SMITH, ESQ.
J. SPARKES, ESQ.
H. E. WATTS, ESQ.

HON. TREASURER.

T. J. SUMNER, ESQ.

SOCIETY'S OFFICE.
No. 30, SWANSTON STREET.

SOCIETY'S DEPÔT.
ROYAL PARK.

MR. GEO. SPRIGG, *Secretary.*

REPORT OF THE COUNCIL,

FOR THE YEAR ENDING 31ST AUGUST, 1864.

The Council of the Acclimatisation Society of Victoria, in submitting to the Subscribers the Third Annual Report of their transactions, remind the Members that, owing to an alteration made at the last Annual Meeting, by which the commencement of the Society's year was made to date from September instead of July, this Report will be a record of what has been done during the last fourteen months, and the Council trust that a perusal of it will prove that much progress has been made, and many important results achieved.

The financial position of the Society is very satisfactory: a large increase has taken place in the private subscriptions, and the Council feel justified in accepting this fact as a proof of the growing interest felt in acclimatisation, and the increasing importance attached to it. The total receipts, including balance from last year, from all sources, has been £5,386 4s. 1d. The total expenditure, £4,689 19s. 2d., thus leaving a balance to the credit of the Society of £696 4s. 11d. The Council would observe, that of the amount placed as expended under the head of Purchase of Animals, the sum of £600 still remains in the hands of the agents abroad.

At the last Annual Meeting, as has been already mentioned, several changes were made in the Rules of the Society, the most important of which were the abolition of the office of Honorary Secretary, and the appointment of a second Vice-President. The post of Honorary Secretary was vacated by Mr. W. H. Archer, not however without a cordial vote of thanks having been conveyed to that gentleman by the Council, for the efficient manner in which he had fulfilled the duties of the office since the foundation of the Society. The additional Vice-Presidency was conferred upon Dr. Thomas Black, as an acknowledgment of the important services he has so constantly rendered to the cause of Acclimatisation.

The following changes have taken place in the composition of the Council. In December the Chief Secretary exercised the power conferred upon him by the Society's Rules, and appointed the Hon. A. Michie, Dr. T. Black, and Mr. W. Lyall, to represent the Government at the Council table. In January Mr. Embling resigned, and was replaced by Mr. D. S. Campbell. In February the Hon. T. T. A'Beckett resigned, and Mr. Loader was elected. In April Professor Halford and Mr. F. R. Godfrey resigned, and the Hon. W. C. Haines and Mr. H. E. Watts were elected; and in May the Hon. S. G. Henty retired, and Dr. Joseph Black was elected; and it now devolves upon this Meeting to confirm these appointments, and to elect three gentlemen to fill the vacancy in the Council caused by the retirement of Colonel Ross, Mr. G. W. Rusden, and Mr. Edw. Wilson. Since the last Annual Meeting there have been fifty-two Meetings of the Council, at which the attendance of Members has been as follows :—

Names.	No. Meetings held during the holding of office.	No. Meetings attended.
Hon. W. C. Haines...	27	4
Dr. Black	52	40
Dr. Mueller	52	30
Hon. T. T. A'Beckett	11	0
Mr. S. H. Bindon	52	30
Dr. J. Black	21	15
Comte de Castelnau	52	5
Mr. D. S. Campbell...	43	23
Mr. H. J. Chambers	52	14
Lieut.-Colonel Champ	52	26
Mr. Thomas Embling	8	1
Mr. F. R. Godfrey	20	9
Hon. S. G. Henty	20	0
Mr. T. Loader	38	9
Mr. W. Lyall	48	2
Professor McCoy	52	35
Dr. Madden	52	39
Hon. A. Michie	48	1
Mr. A. Purchas	52	31
Lieut. Colonel Ross	52	4
Mr. G. W. Rusden	47	27
Mr. J. Smith	52	26
Mr. T. J. Sumner	52	9
Mr. H. E. Watts	27	21
Mr. E. Wilson	46	43

Soon after the publication of the last Report, Mr. E. Wilson, the then President of the Society, returned to the Colony, and at once entered upon the active duties of his position. During his absence from the Council-table, he had not been unmindful of the interests of the Society, and he was enabled to inform the Council upon his return, that the establishment of the gazelle in the Colony had been promised by Sir Charles Nicholson, the acclimatisation of the edible crab by Mr. George McLeay, that of the nightingale and hedge-sparrow by Miss Burdett Coutts and Mrs. Brown, whilst Sir Daniel Cooper had already sent off a valuable shipment of birds, promising at the same time that these should be supplemented from time to time. Another important service rendered to the cause of acclimatisation has been the securing of a promise by the Lords of the Admiralty, that H.M. ships may in passing from one station to another, be rendered available for the purpose of conveying animals, provided that no expense be thrown upon the department. Another important work in acclimatisation was the preparation by the English Society of a set of questions, concerning the animal and vegetable productions of the various countries, a copy of which has been sent, through the agency of the Foreign and Colonial Offices, to all H.M. Consuls and Governors throughout the world. A copy of these questions was courteously laid before the Council by His Excellency Sir C. H. Darling, K.C.B., and a Committee, consisting of Dr. Mueller, Professor McCoy, and Dr. Madden, prepared the replies on behalf of the Society. The answers to these are now being arranged for publication in England, and when completed, cannot fail to be a serviceable guide to all Acclimatisation Societies in their labours.

The Council have long felt it very desirable to have some distinctive medal with which to reward services often of a most valuable character rendered to the Society, and to carry out this object, Mr. Wilson applied himself with characteristic energy. He succeeded in obtaining from several of the Banks a donation of £21 each, and there is every reason to believe that the other Banks will give the same amount towards this special fund. Since his return, he has been as active as ever in the prosecution of acclimatisation, and it is with unfeigned regret that the Council have to state, that in consequence of a complaint in his eyes, rendering necessary another visit to Europe, Mr. Wilson has, in spite of their earnest remonstrances, pressed upon the Council his resignation as President, which resignation the Council have most reluctantly accepted.

The Council unanimously requested the Hon. W. C. Haines, to accept the Presidency, and they are glad to say that that gentleman has consented.

The Council record with much pleasure, that the gold medal of la Société Imperiale d'Acclimatation de France, for this year was conferred upon Mr. Wilson, as a recognition of his indefatigable labours in the cause of acclimatisation.

In passing the vote for the Society this year, the Legislative Assembly attached the condition that £650 should be raised by private contributions. In order to make an appeal to the general public, a circular was prepared,* setting forth in a concise manner, what the Society had accomplished during the short period of its existence, and what were its claims to public support. The response to this was of the most generous and gratifying kind. Subscriptions flowed in from all parts of the Colony, whilst the circular was printed *in extenso* in the transactions of the French Society, as also in *The Times* and *Field*, both which papers contained most flattering articles upon the detailed results of the Society's operations.

In reviewing the more prominent labours of the Council during the past year, a foremost place must be assigned to the introduction of the salmon, constituting as it does a fresh epoch in Australian acclimatisation, and conducing to results of which it is impossible to overestimate the importance. From the few ova that were retained in Victoria, it cannot be asserted with certainty, that salmon is yet established in the Colony, although sufficient has been done to show that there are no insuperable difficulties in the way ; whilst in Tasmania complete success has been attained. To Mr. J. A. Youl must be ascribed the lion's share of praise for the result, whilst these Colonies owe a debt of gratitude to Messrs. Money Wigram and Sons, for the princely generosity which placed the *Norfolk* at Mr. Youl's disposal, for the conveyance of the ova. The Council beg to record here the votes of thanks which they passed to those gentlemen, and to Captain Tonkin, upon the arrival of the *Norfolk ;* and also to Commander Norman upon the successful trans-shipment of the ova to Tasmania.

"The Acclimatisation Society of Victoria takes this the earliest opportunity of recording its sense of the deep obligations which not only the Society, but the whole of the Australian Colonies are under to James A. Youl, Esq., for his constant and undaunted determina-

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* See Appendix.

tion to introduce the salmon to these Colonies, and in congratulating him upon the brilliant success obtained from the experiment made on board the *Norfolk*, the Society wishes distinctly to ascribe that success to Mr. Youl's persevering, enlightened, and patriotic efforts."

"That in association with the very gratifying results now reported of the safe arrival of the salmon ova by the ship *Norfolk*, this Council desires to express its strong appreciation of the munificent conduct of Messrs. Money Wigram and Sons, in their donation of the large amount of space on board their vessel, and beg to congratulate that firm upon the hopeful prospects in one of the most interesting of experiments, and one fraught with vast importance to the Australian Colonies to which their liberality has so decidedly conduced."

"That the best thanks of the Council are due to Captain Tonkin and Mr. Carpenter, of the ship *Norfolk*, for the care taken, and the zeal exhibited in reference to the salmon ova on board that vessel, and the Council hereby expresses its conviction, that to that care no small portion of the gratifying success, now reported, may be attributable."

"The Council of the Acclimatisation Society desires to express to Commander Norman, of H.M.C.S.S. *Victoria*, its thorough appreciation of the skill, zeal, and intelligence with which he has so successfully accomplished the delicate and important duty of conconveying the salmon ova to Tasmania, and beg herewith to present him with the best thanks of the Council as an acknowledgment of the valuable services rendered by him to Acclimatisation."

Another subject of congratulation is the introduction of the gouramier from the Mauritius. For this the Colony is indebted to Messrs. Joshua Brothers, by whose orders and at whose expense the attempt was made by Captain Beaton. Twenty-four of these desirable fish reached Melbourne alive, and there is every reason to hope these will establish the species in the Colony.

The other introductions have been as follows :—

5 Alpacas (from Sydney)	4 Chinese partridges
3 Sambur deer	9 English partridges
2 Hog deer	15 Ceylon partridges
2 Bara singha deer	8 Indian partridges
1 Formosa deer	80 Chinese quail
8 Spotted Axis deer	23 Tasmanian quail
4 Small Axis deer	8 Godwits
2 Moose deer	3 French fowls
10 English hares	4 Roman pigeons

2 White swans	20 Mainas
2 Crowned Goura pigeons	12 Powi birds
14 Carolina ducks	140 Java sparrows
2 Tree ducks	20 English siskins
5 Ceylon peafowl	40 English finches, various
9 Chinese pheasants	36 Tench.

During the past year there have been liberated—

AT PHILLIP ISLAND.

6 Hares	4 Chinese partridges
5 Cape pheasants	70 Chinese quail
8 English pheasants	23 Tasmanian quail
4 Indian pheasants	6 Starlings
8 Ceylon partridges	10 Algerine sand grouse
5 Indian partridges	6 Wild ducks

AT THE ROYAL PARK.

3 Hares	20 Greenfinches
20 Mainas	200 Java sparrows
6 Starlings	6 Blackbirds
60 English sparrows	20 Siskin finches
15 Yellowammers	6 Powi birds
40 Chaffinches	3 Chinese pheasants

AT PENTRIDGE.

40 English sparrows.

AT ST. KILDA.

20 Chinese sparrows.

AT BALLAARAT.

25 English sparrows 20 Java sparrows.

AT BUNEEP.

13 Fallow deer.

This list will prove that the Council have not flagged in their labours during the past year; and, necessarily slow as the work of acclimatisation must be, yet with such a list of successes as this to show in the short space of fourteen months, the results of the Society's labours must soon begin to be manifest.

At the suggestion of Dr. Black a large number of Murray codfish have been procured during the past year, from the Murray, and placed in the Yan Yean reservoir, with a view to spread the supply of that valuable fish throughout the Colony.

The Council are glad to be able to report that the Cashmere goats which were removed to Maryborough at the suggestion of the same gentleman, have thriven and increased in number.

The flock of llama alpacas, the Council regret to say, have been decreased by death. Fluke has appeared amongst them, induced by the extraordinary wet weather experienced lately. Measures are now being adopted to secure the immediate removal of the survivors to the more congenial climate of the Gipps Land Ranges.

The experience of the last few years has determined the Council to materially alter the system hitherto pursued in regard to the animals at the Royal Park. It has been found that in some respects the Royal Park is unsuited to serve as a permanent place of acclimatisation, owing to the dampness of the soil, its confined situation, and the difficulties attending the construction of proper breeding-houses, especially for the birds. It has therefore been resolved that for the future the first and immediate object of the Society should be the distribution of the animals throughout the Colony. Under the new system, the Royal Park will be used merely as a temporary place of reception for animals on their first arrival in the Colony, until they are healthy and in sufficient numbers to be turned loose, with a reasonable hope of establishing the breed.

With respect to the future the Council have every reason to look forward with increased confidence. £500 has been voted specially for the introduction of some of the magnificent game birds of India, such as the Monal, Kaleege, Tragopan, and Pucras pheasants; the large Himalayan partridges, the floriken, the bustard, the rock pigeon, &c. &c. £400 has been reserved for further introduction of salmon and trout ova, in order that at as early a date as possible the streams of the Colony may be stocked with these delicious fish. It has also been determined with a portion of this sum to try the introduction of the salmon trout, grayling, perch, and charr; and the Council have requested the valuable assistance of Mr. J. A. Youl to assist them in carrying out these views. £300 has been sent home for the purpose of procuring in larger numbers the Angora goat; the experience which the Council has had with this goat leading them to look upon it as a valuable addition to the permanent wealth of the Colony; and to this sum Mr. W. G. M'Cullough of Maryborough laudably added £600 for a like introduction on his own account.

Within the last few months a committee has been appointed by the Council, "for the purpose of collecting and reporting upon all available information with reference to the varieties, the habits, the seasons, and the qualities of our marketable fishes, with a view to

their protection and increase, and the consequent development of the fishery trade in this country." A large amount of valuable information has been collected by this committee, this is now being condensed in the report which is being prepared; and before long the Council hope to be able to lay before the members a copy of that report.

During the past year monthly meetings of the Society have been held in Melbourne and suburbs, at which papers on various subjects have been read, in order to bring the objects of the Society more prominently before the public.

Following the example set by the Imperial Society of France, the Council determined to hold under their auspices an Exhibition of Dogs, and it is not now necessary to recall the success which attended their efforts; while it is satisfactory to add that financially the Exhibition was self-supporting, and that the funds of the Society were not in any way drawn upon.

The Council regret the almost total failure of Mr. Duffield's Alpaca experiment, from which so much good was expected, in spite of his energetic and enterprising efforts. The failure, however, is not such as to cause despair of final success. The causes of the mortality to which the alpacas were subjected are found to have arisen, first, from the great and exhausting hardships suffered by the animals during their passage hither; and, secondly, to their retention in the low, and damp soil in the neighbourhood of Melbourne. It is hoped that with greater care in the shipment, and with a wiser choice of a locality for their reception, the alpaca may yet be profitably acclimatised in Victoria; and the Council have much pleasure in reporting that Mr. Duffield, undaunted by his late ill success, is about to undertake a second attempt to introduce the alpaca into this Colony. *

In concluding this report of their proceeedings of the past fourteen months, the Council must again record its sense of deep obligation to Dr. Thomas Black, whose great interest in and valuable services rendered to the Society continue undiminished. The Council are also greatly indebted to Professor McCoy, who in spite of the multifarious calls upon his time and attention has always rendered to this Society services of a valuable and scientific character. The Council would also present their best thanks to Messrs. Wilson Bros., of the Wimmera, and to Captain Skottowe of the R.M.S. *Northam*, to Captain Farquhar of the R.M.S. *Madras*,

* In Appendix.

to Captain Burne of the R.M.S. *Bombay*, to Captain Shinner of the *Lincolnshire*, to Mr. R. S. R. Fussell of Fouchou, to Mr. C. P. Layard of Colombo, to Mr. J. Weir of Point de Galle, to Mr. J. Sparkes of Melbourne, for valuable co-operation received in carrying out the objects of the Society, and to Mr. W. Godfrey and Mr. J. Spowers, for their services in auditing the Society's accounts. The Council have much pleasure in bearing testimony to the valuable assistance they have derived from many friends of the cause both in the Colony and abroad, as well as to the zeal and continued attention of their Secretary, Mr. Geo. Sprigg.

ACCLIMATISATION SOCIETY.

Dr. *From July 1st, 1863, to August 31st, 1864.* **Cr.**

	£	s.	d.
To Balance brought forward	279	9	6
„ Cash received from Government	3,750	0	0
„ „ „ Subscriptions and Donations ...	895	18	1
„ „ „ Grazing Fees...	367	2	0
„ „ „ Sale of Animals	93	14	6
	£5,386	4	1

	£	s.	d.
By Purchase of Animals	1,216	4	0
„ Park Improvements	749	0	8
„ Salaries and Wages	1,355	2	11
„ Stores, Tools, and Contingencies	357	18	2
„ Food and Forage	401	3	2
„ Office Expenses	297	8	6
„ Phillip Island Depôt	156	3	9
„ Expenses on Salmon	156	18	0
„ Cash in hands of Bank...	696	4	11
	£5,386	4	1

THEO. JNO. SUMNER, *Hon. Treasurer.*

We have examined and compared this Account with the Books (and Vouchers for the expenditure) and find the same to be correct. In the absence of Vouchers, we assume the amount stated to be received from Government to be correct.

WILLIAM GODFREY.
JAS. SPOWERS.

Nov. 4th, 1864.

LIFE MEMBERS.

All Members marked thus * pay their Annual Subscription also.

Aldworth and Co., Sandhurst £10 10 0
Armitage, George, Ballaarat .. 10 10 0
Austin, Thomas, Barwon Park .. 10 10 0
Bagot, C. N., Melbourne Club .. 10 10 0
*Barkly, His Excellency Sir Henry, Mauritius 21 0 0
*Bear, Hon. J.P., M.L.C., Queen Street 21 0 0
*Bear, Thomas H., Heidelberg .. 10 10 0
*Black, Dr., Thomas Melbourne Club 10 10 0
Box, H., Little Collins Street West 10 10 0
Bright Brothers, Messrs. & Co., Flinders Lane 10 10 0
Brown, Lindsay, Garramadda, Wahgunyah 10 10 0
Catto, John, Newbridge, Loddon 10 10 0
Chambers, H. J., St. Kilda Honorary
Cooper, Sir Daniel, London .. 87 2 0
*Coppin, Hon. Geo., M.L.C., Cremorne 10 10 0
Creswick, Borough Council of, .. 10 10 0
*C. S. Officer, Mount Talbot .. 10 10 0
*Dalgety & Co., Messrs., Little Collins Street.. .. .. 10 10 0
*Darling, His Excellency Sir Charles H., Toorak 10 10 0
*Docker, Rev. Joseph, Wangaratta 21 0 0
Eldridge, James, Oakleigh .. 50 0 0
*Falconer, J. J., Bank of Australasia 20 0 0
Firebrace, R. T., Heyfield, Gipps Land 10 10 0
Fussell, R. S. R. Fou Chou dolls. 50 .. .. 11 0 10
Glass, Hugh, 18, A'Beckett Street 21 0 0
*Haines, The Hon. W. C., Melbourne Club 10 10 0
*Henty, The Hon. S. G., M.L.C., 31, Market Street 10 10 0
*Hervey, The Hon. M., M.L.C., Melbourne Club 10 10 0
*Hoffmann, W., Bush Back, Essendon 25 0 0
Jones, Lloyd, Avenel 10 10 0
*Joshua Bros., William Street .. 10 10 0
Kennedy, Hon. D., M.L.C., Lansdowne Terrace, St. Kilda 10 10 0
Learmonth, Thomas, Ercildanriley, Portland 10 10 0
Layard, C. P., Colombo .. Honorary
Lyall, W., Frogmore .. £10 10 0
Martin, Dr., Heidelberg 10 10 0
Mackenzie, John, 70½ Queen Street 10 10 0
Mackinnon, L., "Argus" Office Honorary.
Marshall, Captain, D. S., "A. H. Badger" .. .. Honorary
McGill, A., ... 10 10 0
McHaffie, John, Phillip Island .. 10 10 0
McMullen, J., Union Bank .. 21 0 0
Macintoah, Alexander, Green Hills, Diggers Rest 10 10 0
McMillan, A. Dargo, Gipps Land 10 10 0
Molloy, W. T., Balmoral 10 10 0
Mueller, Dr., Botanic Gardens .. 10 10 0
Municipal Council of Ballaarat West 20 0 0
Nicholson, Hon. W., 13, Flinders Street West 10 10 0
*Nicholson, Germain, Collins Street East 10 10 0
*Power, Hon. Thomas H., Hawthorne 10 10 0
Purchas, Albert, Kew .. Honorary
*Rostron, John R., Navarre .. 10 10 0
*Rutledge, William, Belfast .. 10 10 0
*Salmon, J., E., S., and A. C. Bank 21 0 0
Sargood, King & Sargood, Flinders Street West 10 10 0
Simpson, Robert, Winchelsea .. 10 10 0
Sloan, W. S., Fou Chou, dols. 50 .. .. 11 0 10
*Spowers, Allan, "Argus" Office 10 10 0
Stanbridge, W. E., Daylesford .. 10 10 0
Staughton, S. T., Little Collins Street West 10 10 0
Strachan, J., London Chartered Bank 21 0 0
Sumner, T. J., 24, Flinders Lane West 10 10 0
Taylor, Frederick, Melbourne Club 10 10 0
*Taylor, W., Overnewton, Keilor 10 10 0
Templeton, Hugh, Fitzroy Honorary
Ware, Joseph, Carramut 10 10 0
Wilson and Mackinnon, Collins Street East 42 9 0
*Wilson, Edward, "Argus" Office 21 0 0
Wilson, Samuel, Wimmera .. 10 10 0
Winter, James, Toolambra, Murchison 10 10 0
Winter, Thomas, Lange Kal Kal 10 10 0

ANNUAL MEMBERS.

All Members marked thus * are Life Members also.

a'Beckett, T. T., Chancery Lane £2 2 0
Adeney, Wm., Chocolyn, Camperdown £2 2 0
Alves, John, 81, Elizabeth-st. .. 2 2 0
Anderson, Sharp, & Wright, Carron Timber Yard 2 2 0
Anderson, R. S., Queen Street .. 2 2 0
Bagot, R. C. Bourke Street West 2 2 0
Baines, Edward, Little Collins Street West 2 2 0
Band, M. H., Mount Bute .. 2 2 0
Baynton, Thomas, Kyneton .. 2 2 0
Beaney, J. G., 154, Collins St. East 2 2 0
Bear, Hon. J. P., Queen Street .. 2 2 0
Benn, John, 24, Flinders Lane West 2 2 0
Bindon, S. H., M.L.A., Temple Court 2 2 0
Bland, R. H., Clunes 2 2 0
Black, Dr. Joseph, Bourke-street West 2 2 0
Bligh & Harbottle, Flinders Lane West 2 2 0
Bon, John, Wappan 2 2 0
Bon, J. and W, Miller's Ponds, Merton 2 2 0
Brodribb, W. A., Brighton .. 2 2 0
Brodribb, K. E., Chancery Lane 2 2 0
Briscoe & Company, 11, Collins Street East 2 2 0
Broad, Richard, Benalla 2 2 0
Brown, Charles, 33, Bourke Street West 2 2 0
Brown, G. G., Hall of Commerce 2 2 0
Buchanan, Isaac, Roseneath, Gipps Land 2 2 0
Buckley & Nunn, 27, Bourke St. East 2 2 0
Callender, J. & Co., 26, King St. 2 2 0
Campbell, D. S., Bank Place .. 2 2 0
Campbell, Colin, Buangor .. 2 2 0
Carfrae, John, Victoria Parade .. 2 2 0
Carter and Watts, 70, Little Collins Street East 2 2 0
Carter, Ernest, 50, Russell Street 2 2 0
Champ, Colonel, William Street 2 2 0
Chapman, H. S., New Zealand .. 2 2 0
Charsley, Edward, 91, Chancery Lane 2 2 0
Christie, F. C., Williamstown .. 2 2 0
Clark, Richard, Benalla 2 2 0
Clark, Walter, Glenarra, Bulla .. 2 2 0
Clarke, W., and Sons, 86, Elizabeth Street £2 2 0
Clarke, W. J., Collins Street East 2 2 0
Clarke, W. J., Sunbury 2 2 0
Clough, J. H., & Co., Messrs., 113, Collins Street West .. 2 2 0
Cooling, R. H., Bourke Street East 2 2 0
Cooper, Horatio, St. Kilda .. 2 2 0
*Cooper, Sir Daniel, London .. 2 2 0
Crisp, Geo., Queen-Street .. 4 4 0
Cunningham and Macredie, Collins Street West 2 2 0
Cunningham, H., St. Heliers .. 2 2 0
Curcier and Adet, Market Street 2 2 0
Currie, J. L., Cressy 2 2 0
*Darling, His Excellency Sir Chas. H., Toorak 6 6 0
Degraves, Hon. W., M.L.C., Flinders Lane East 2 2 0
Dennis, Wm., Cairo Plains Glenorchy 2 2 0
Dill, George, "Argus" Office .. 2 2 0
*Docker, Rev. Joseph, Wangaratta 2 2 0
Drysdale, T. A., 112, Collins Street West 2 2 0
Duerdin, J., Collins Street West 2 2 0
Eager, D., Pine Hills 5 0 0
*Falconer, J. J., Bank of Australasia 2 2 0
Falk, P., & Co., 38, Little Collins Street West 2 2 0
Ferguson and Moore, Flinders Lane East 2 2 0
Findlay, James, Talangatta, Albury 2 2 0
Finlay, J., Emerald Hill 2 2 0
Fisher, Richards & Co., 114, Collins Street West 2 2 0
Fitzgerald, J., Lonsdale Street East 2 2 0
Fleetwood, T. P., Little Collins Street West 2 2 0
Francis, J. G., M.L.A., 26, King Street 2 2 0
Fraser & Co., 14, Collins Street West 2 2 0
Fulton, Thomas, & Co., 129½, Flinders Street West 2 2 0
Gilles, L., Warrnambool 2 2 0
Godfrey, F. R., Somerton .. 2 2 0
Goldsborough, R., & Co., Bourke Street West 2 2 0

Graham, J., 97, Little Collins St., East	£2	2	0
Grant, Daniel, 58, Elizabeth St.	2	2	0
Grant, Robert, Switzerland	2	2	0
Gray, W. W., Narut Nareeb	2	2	0
Gurner, H. F., 192, Collins Street	2	2	0
Haigh Brothers, 58, Collins St. East	2	2	0
*Haines, Hon. W. C., Melbourne Club	2	2	0
Hamilton, William, Glenurma, Broadford	2	2	0
Harris, Nathaniel, & Co., 36, Elizabeth Street	2	2	0
Henty, Hon. James, M.L.C., 11, Little Collins Street West.	2	2	0
Henty, Herbert James, 11, Little Collins Street West.	2	2	0
Henty, Henry, 11, Little Collins Street West.	2	2	0
*Henty, Hon. S. G., Market Street	2	2	0
Hetherington, Charles, 8, Collins Street West.	2	2	0
Highett, Hon. W., M.L.C., Melbourne Club	2	2	0
Higinbotham, Hon. Geo, M.L.A., Temple Court	2	2	0
*Hoffmann, W., Bush Back, Essendon	2	2	0
Hogg, E. J., Brookville, South Yarra	2	2	0
House, Samuel, & Co., Queen Street	2	2	0
Howitt, A. W., Omeo	2	2	0
Hughes, C. W., Brighton	2	2	0
Halford, Prof., University	2	2	0
Jackson, Henry, Sandhurst	3	3	0
Jones, Henry, Birrum, Apsley	2	2	0
Johnston, Hon. J. S., St. Kilda	2	2	0
Jones, Henry, Sandhurst	2	2	0
Joshua, Bros., 46, William Street	2	2	0
Kerr, W. L., Killingworth	2	2	0
Kew, Borough Council of	2	2	0
Kilpatrick & Co., Collins Street West	2	2	0
Knight, A. H.	2	2	0
Kong, Meng & Co., Little Bourke Street East	2	2	0
Lang, G. S., St. Kilda	2	2	0
Larnach, Bank of New South Wales, London	5	5	0
Lempriere, C., Elizabeth Street	2	2	0
Leroyd, J.	2	2	0
Loader, Thomas, Elizabeth St.	2	2	0
Levy Bros., Bourke Street East	2	2	0
Macfarlane, A., & Co., 13, Flinders Lane East	2	2	0
Mackintosh, A., Green Hills, Digger's Rest	2	2	0
Madden, Dr., Collins Street East	£2	2	0
Martin, George, & Co., 25, Market Street.	2	2	0
Martin, Dr., Heidelberg	4	4	0
Mason and Firth, Flinders Lane West	2	2	0
Maxfield, James, Kilmore	2	2	0
McCrae, A., Kilmore	2	2	0
McCoy, Professor, University	2	2	0
McCracken, R., 120, Little Collins Street West	2	2	0
McCulloch, Sellar & Co., Queen Street	2	2	0
McKenzie, A. Reedy Creek	2	2	0
McLeish, D., Glenmore, Yea	2	2	0
McNaughton, Love and Co., Flinders Lane East	2	2	0
Michie, Hon. A., Temple Court	2	2	0
Mitchell and Bonneau, Elizabeth Street	2	2	0
Mitchell, Hon. W. H. F., M.L.C., Hawthorne	2	2	0
Moore, S., Collins Street West	2	2	0
Morris, James, Yan Yean	2	2	0
Morrison, A., Scotch College	2	2	0
Murphy, E. J., Eldon Chambers	2	2	0
Muttlebury, J. W., Queen Street	2	2	0
Nankivell, T. J., 3, Elizabeth St.	2	2	0
Napier, Thomas, Moonee Ponds	2	2	0
*Nicholson, Hon. W., St. Kilda	2	2	0
*Nicholson, Germain, 69, Collins Street East	2	2	0
Nordt, Heyde & Co., Collins St. West	2	2	0
Nutt, R. W., William Street	2	2	0
Ogilvy, David, 65, Queen Street	2	2	0
O'Neill, H., Brighton	2	2	0
Parbury, Lamb & Co., Queen St.	2	2	0
Paterson, Ray, Palmer, & Co., 33, Flinders Lane West	2	2	0
Patmore, Gurney, "Argus" Office	2	2	0
Pearson, John, Shadwell Park, Mortlake	2	2	0
Phelps, J. J., Melbourne Club	2	2	0
Piper, William, Benalla	2	2	0
Politz & Co., Bourke Street West	2	2	0
*Power, Thomas H., Queen Street	2	2	0
Prost, Kohler & Co, 9, Elizabeth Street	2	2	0
Pugh, Dr., 131, Collins St. East	2	2	0
Ritchie, D., Blackwood, Penshurst	2	2	0
Ritchie, J., Bordcarra, Belfast	2	2	0
Ritchie, H.	2	2	0
Robertson, G. Warrock, Casterton	2	2	0
Robinson, L., 37, Collins St. East	2	2	0
Rolfe and Balley, Bourke Street West	2	2	0

Ross, Colonel, Melbourne Club ..	£2	2	0
Ross, P. F., Collins Street West	2	2	0
Rusden, G. W., Brighton.. ..	2	2	0
Russell, Thomas, Warrock, Rokewood	2	2	0
Ryan and Hammond, Bourke St. West	2	2	0
*Salmon, J., E. S. & A. C. Bank .	2	2	0
Sands and McDougall, Collins St. West	2	2	0
*Sargood, King and Sargood, 23, Flinders Street East	2	2	0
Schlostein, A., Flinders Lane West	2	2	0
Schuhkrafft, A. W., 180, Elizabeth Street	2	2	0
Selwyn, A. R. C., Brighton ..	2	2	0
Sharpe, H. L., 13, Elizabeth St.	2	2	0
Shaw, Thomas, Darlington ..	2	2	0
Sherwin, John, Bradmoree, Merrang	2	2	0
Sloane, W. & Co. Collins Street West	2	2	0
Smale, A. W., 105, Collins Street East	2	2	0
Sparkes, J., 5, Flinders St. East	2	2	0
*Spowers, Allan, "Argus" Office	2	2	0
Sprigg, W. G., 3, Flinders Lane East	2	2	0
Stead Brothers, 43, Swanston St.	2	2	0
Stevenson, L., and Sons, Flinders Lane East	£5	5	0
Steavenson, John, Roads and Bridges Office	2	2	0
Strutt, C. E., Echuca	2	2	0
Stutzer, J. J., "Argus" Office ..	2	2	0
Swan, William, Colerane	2	2	0
Taylor, Hon. Wm., Overnewton, Keilor	2	2	0
Terry, Leonard, William Street...	2	2	0
Thomas, Dr., Collins Street East	2	2	0
Topp, Samuel & Co., Flinders Lane West	2	2	
Turnbull, R. & P., William Street	2	2	0
Watson, G., Bourke Street West	4	4	0
Watts, H. E., Melbourne Club ..	2	2	0
White, W. P., & Co. 10, Elizabeth street	2	2	0
Williams, W., Spencer Street ..	2	2	0
Wilshin & Leighton, 7, Market Street	2	2	0
*Wilson, Edward, "Argus" Office	2	2	0
Wilson, Dr., Summer Hill, Somerton	2	2	0
Wragge, George, 134, Collins Street East	2	2	0
Wyatt, Alfred, Temple Court ..	2	2	0
Younghusband and Co., 36, Elizabeth Street	2	2	0

DONATIONS.

Armstrong, —, Werribee	£1	0	0
Baker, —, Werribee	0	5	0
Bamford, J., Swanston Street ..	1	1	0
Bancroft, E., Flinders Lane East	1	0	0
Beauchamp and Rocke, Collins Street East	1	1	0
Bertram, —, Werribee	0	10	0
Beveridge, A., Kilmore	1	0	0
Bunny, B F., Temple Court ..	1	0	0
Butey, M., Bulla	0	10	0
Butler and Moss	0	10	0
Cameron, James, Merriang ..	0	10	0
Cobbledich, —, Werribee	0	10	0
Cochrane and Co.	0	10	6
Collie, J., Collins Street East ..	1	1	0
Corcoran, John, Tullamarine ..	1	0	0
Courtney, E., Temple Court ..	1	1	0
Daly	1	1	0
Duncan, G., Dentgan	1	0	0
Farron, Wm., Derrimut	0	5	0
Fellows, Thos. H., Temple Court	1	1	0
Ford, W., and Co., Swanston Street	1	1	0
Fraser, C. R. W., Kilmore ..	£1	1	0
Gibbs, Henry, Whittlesea	1	1	0
Gibbs, S. M.	1	0	0
Gotch, J. S., Collins Street West	1	1	0
Grant, Thomas, Glenilgan	1	0	0
Hardy and Co.	0	10	0
Harvey, J., Little Collins Street West	1	1	0
Howitt, Dr., Collins Street East ..	1	0	0
Irvine, J. A., Flinders Street ..	1	0	0
Johnstone, G. and F., Collins Street West	0	10	0
Jones, —, Melton	0	5	0
Katzenstein, J., Flinders Lane West	1	1	0
Kronheim and Co.	0	5	0
Langlands Bros., Flinders Street West	1	1	0
Levi, N., Collins Street West ..	1	1	0
Lodman, M., Bulla	1	0	0
Lord and Co., Collins Street West	1	1	0
MacGregor, D. R., Woodstock ..	0	10	6
Macintosh, James, Oakland ..	1	0	0

Mathewson, J., ...	£1	0	0
McKenzie, J. M., Cloubmane, Kilmore	1	0	0
McMahon, Thomas, Kororoit ..	0	10	0
Miller, Mrs., Yea	1	1	0
Newnham, —, Melton .. :	0	10	0
New, Rev. Isaac, Barkly Terrace..	1	1	0
Oliver, Thomas, Campbellfield ..	0	10	0
Oswald and Inglis, Flinders Street West	1	0	0
Philps, P. S.	0	10	0
Ray, Dr.	1	1	0
Reynolds and English, Collins Street East	1	0	0
Robertson, George, 69, Elizabeth Street	1	1	0
Ronald, Dr., Whittlesea	£1	0	0
Ross, C. S., Collins Street West ..	0	10	0
Taylor, T. H.	1	0	0
Towns, R., and Co., William Street	1	1	0
Tulloh, W. F., Mount Cotteril ..	1	0	0
Vaughan, Moule, and Seddon, Chancery Lane	1	1	0
Watson and Sons, Little Collins Street East	1	1	0
Whitney, J., Swanston Street ..	1	1	0
Wilson, Henry, Kilmore	1	0	0
Wilton, John, Morang	1	1	0
Wilson, W. S., Kororoit	1	0	0
Young and Martin	1	1	0

HONORARY MEMBERS.

Beckx, Gustave, Flinders Lane West.
Biagi, Giuseppe, William Street.
Blanchard, W., Collins Street West.
Castelnau, Comte de, Apsley Place.
Chalmers, Dr., New Zealand.
Cooper, Ricardo, Queen Street.
Damyon, James, Market Street.
Drouyn, de Lhuys, Paris.
Fussell, R. S. R., Fou Chou.
Gillanders & Arbuthnot, Calcutta.
Godfrey, Captain, J. B., New Zealand.
Graham, James, Little Collins Street East.
Grote, Arthur, Calcutta.
Kohler, George, Elizabeth Street.
Landells, G. J., King Street.
Macaulay, W., Singapore.
Michaelis, Moritz, Elizabeth Street.
Mullick, Rajendro, Calcutta.
Newnham, J. A., Flinders Street West.
Ploos Van Amstel, J. M., Collins St. West.
Ramel, Monsieur, Paris.
Reid, Captain, R.M.S. "Bombay."
Rentsch, Samuel, Flinders Street East.
Robinson, J., Calcutta.
Scholstein, Adolp., Flinders Lane West.
Sparkes, John, Flinders Street East.
Squire, Surgeon John, Dinapore.
Were, J. B., Collins Street West.

THE RULES AND OBJECTS

OF THE

Acclimatisation Society of Victoria.

Objects of Society.

1. The objects of the Society shall be the introduction, acclimatisation, and domestication of all innoxious animals, birds, fishes, insects, and vegetables, whether useful or ornamental;—the perfection, propagation, and hybridisation of races newly introduced or already domesticated;—the spread of indigenous animals, &c., from parts of the colonies were they are already known, to other localities where they are not known;—the procuring, whether by purchase, gift, or exchange, of animals, &c., from Great Britain, the British colonies, and foreign countries;—the transmission of animals, &c., from the colony to England and foreign parts, in exchange for others sent thence to the Society;—the holding of periodical meetings, and the publication of reports and transactions, for the purpose of spreading knowledge of acclimatisation, and inquiry into the causes of success or failure;—the interchange of reports, &c., with kindred associations in other parts of the world, with the view, by correspondence and mutual good offices, of giving the widest possible scope to the project of acclimatisation;—the conferring rewards, honorary or intrinsically valuable, upon seafaring men, passengers from distant countries, and others who may render valuable services to the cause of acclimatisation.

Membership.

2. A Subscriber of two guineas or upwards annually shall be a Member of the Society; and contributors, within one year, of ten guineas or upwards shall be Life Members of the Society; and any person who may render special services to the Society, by contribution of stock or otherwise, shall be

eligible for life membership, and may be elected as such by the Council, or by any annual general meeting.

Subscriptions.

3. The annual subscription shall be payable on the 1st day of September in each year, and may be received by any Member of the Council, or the Collector, either of whom on receiving the same shall cause the person so subscribing to be enrolled a member accordingly.

Property vest in Trustees

4. All the property of the Society, of what nature and kind soever, shall vest in Trustees to be appointed by the Council, for the use, purposes, and benefit of the Society.

Executive Officers.

Council.

5. The Society shall be governed by a Council of eighteen Members, to include a President, two Vice-Presidents, and an Honorary Treasurer, three of whom (viz., those who have attended the fewest Meetings of the Council proportionately since their appointment) shall retire annually, but shall be eligible for re-election. Provided that if any sum of money be voted to the Society by Act of Parliament, or trusts conferred upon the Council by the Government, then it shall be lawful for the Chief Secretary for the time being to appoint, if he consider it expedient, any number of gentlemen, not exceeding three, to act as Members of the Council, and they shall have all the privileges as if otherwise duly elected; and further, to appoint one Co-Trustee, to act in conjunction with the Trustees for the time being of the Society. And provided further, that if the Melbourne Corporation, or any of the adjacent municipalities, shall decide upon expending any sum of money exceeding £100 in any one year, upon the grounds or for the objects of the Society, the Mayor of Melbourne or Chairman of such municipality shall be for such year a Member of the Council, and be at liberty to act in every respect as an ordinary member.

Vacancy in Council, how supplied.

6. In case of a vacancy occurring by the death, resignation, or non-attendance of any Member of Council for the period of two months, the remaining Members may appoint another Member of the Society to be a Member of the Council in the place and stead of the deceased, or resigned, or absenting Member, and such new Member may act until the next annual general meeting. Provided that such vacancy shall not be supplied by the Council except after seven days' notice given

of the new Member to be proposed, and unless in the presence of at least seven Members of the Council.

Quarterly Meetings of the Society.

7. The Society shall hold periodical meetings, at which papers and other communications relating to the objects of the Society, and reports prepared by the Council, shall be received, and such discussions shall be encouraged as may be of value in propagating a knowledge of acclimatisation amongst the Members and the public. And such business generally shall be disposed of as may be brought under consideration by the Council or by any Member who shall have given seven days' previous notice thereof to the Secretary, or as a majority of two-thirds of the Members present shall see fit to entertain and consider; and each Member shall have the privilege of introducing two friends at such meetings.

Meetings of Council.

8. The Council shall meet at least once a month, and three Members (of whom the President, one of the Vice-Presidents, or Honorary Treasurer shall be one,) shall form a quorum, and be capable of transacting the business of the Council, subject to such limitations as may be imposed by any bye-law of the Council, or rule, or resolution of the Society, which may be hereafter made.

Powers and Duties of Council.

9. The Council shall have the sole management of the affairs of the Society, and of the income and property thereof, for the uses, purposes, and benefit of the Society; and shall have the sole and exclusive right of appointing a President, Vice-Presidents, and Honorary Treasurer from amongst themselves or the other Members of the Society, and also of appointing paid servants, as a manager or secretary, collector, and such other officers, clerks, and labourers, and at such salaries as they may deem necessary, and of removing them if they shall think fit, and shall prescribe their respective duties. And such Council shall have power to consider and determine all matters, either directly or indirectly affecting the interests of the Society, and if they shall think fit so to do, shall bring the same under the notice of the Members of the Society, at any general or special meeting; and to make such bye-laws as they may deem necessary for the efficient management of the affairs and the promotion of the objects of the Society, and for the conduct of the business of the Council, provided the

same are not repugnant to these rules; to appoint one or more sub-committees, for any purpose contemplated by these rules; and generally to perform such acts as may be requisite to carry out the objects of the Society, which bye-laws are to be subject to ratification, or emendation, or rejection, by the next annual or special general meeting of the Society. And it shall be the duty of the Council to exercise the foregoing powers as occasion shall require, and to furnish reports of the proceedings at every periodical and annual meeting of the Society.

Branch Societies, &c

10. The Society shall have power to affiliate or associate itself with other Societies of kindred objects, and to found Branch Societies if desirable; and the Council shall have power to carry out any arrangements for this purpose, and to furnish any monthly or other reports.

Minutes of Proceedings.

11. Minutes shall be made, in books kept for the purpose, of all the proceedings at the general and special meetings of the Members, and minutes shall also be made of the proceedings of the Council at their general and special meetings, and of the names of the Members attending the same, and such minutes shall be open to inspection by any Member of the Society at all reasonable times.

Moneys to be paid to Treasurer.

12. All subscriptions and other moneys payable to the Society shall be paid to the Treasurer, who shall forthwith place the same in a bank, to be named by the Council, to the credit of the Society; and no sum shall be paid on account of the Society until the same shall have been ordered by the Council, and such order be duly entered in the book of the proceedings of the Council; and all cheques shall be signed by the Treasurer as such, and be countersigned by the President, or one of the Vice-Presidents, or by some other Member of the Council delegated by the Council to act as such.

Annual Meeting.

13. An annual meeting shall be held in November of each year, and the Council shall report their proceedings during the past year, and shall produce their accounts, duly audited, for publication if deemed desirable; and the meeting shall elect new Members of Council to supply the vacancies therein. And notices of motion must be furnished to the Secretary one day previous to the holding of

such meeting, or such motions may be rejected by the Chairman.

Non-payment of Subscriptions.

14. All privileges of membership shall cease in case any Member shall be three months in arrear, subject, however, to his restoration on the payment of such subscription as aforesaid, accompanied by satisfactory explanation.

Special Meetings of Members.

15. Upon receiving a requisition in writing, signed by twelve or more Members of the Society, or upon a resolution of the Council, the President, or in his absence one of the Vice-Presidents, shall convene a special meeting of the Members, to be held within fifteen days of the receipt by him of such requisition or resolution. Provided always that such requisition and resolution, and the notices thereunder convening the meeting, shall specify the subject to be considered at such meeting, and that subject only shall be discussed at such meeting.

Honorary Members.

16. The Council or any general meeting of the Society may admit, as Honorary Members, such ladies or gentlemen as may have distinguished themselves in connection with the objects of the Society, or in objects of a kindred nature.

Power to alter Rules.

17. It shall be lawful for any annual or special meeting of the Society to alter, vary, or amend the rules; or to substitute another for any of the same; or to make any new rule which may be considered desirable; if and after a notice specifying the nature of such alteration, variation, amendment, substitution, or new rule, shall have been given to the Secretary fifteen days before the holding of such meeting. And such alteration, variation, amendment, substitution, or new rule, shall be valid if carried by a majority of not less than two-thirds of the Members present at such meeting.

PROCEEDINGS

AT THE

THIRD ANNUAL MEETING,

Held November 11th, 1864.

The Third Annual Meeting of the Acclimatisation Society of Victoria was held at their offices in Swanston-street, on Friday afternoon, November 11th. The attendance comprised most of those gentlemen who have distinguished themselves in connection with the subject of acclimatisation in Victoria. The chair was taken by His Excellency the Governor.

His Excellency said that in opening the proceedings of the third annual meeting of the society he had no intention of detaining them long from the practical business of the day. Were he to attempt a retrospective view of the proceedings of the society during the past year, he would be only relating facts with which the members were much better acquainted than he was; and as for the public, he should be only giving them an imperfect account of that which would be given with much more accuracy in detail by the report of the Council which would be published. Having had the opportunity of perusing the intended report, he was happy to find that he could congratulate the Society on the great improvement that might be said to have taken place in their position and prospects in every respect. He was glad to see, that their finances were satisfactory—that their list of subscribers was greatly enlarged, and that their correspondence with the various parts of the world in which they were interested was much amplified. The Society had also good reason to congratulate itself on the number of objects and proper subjects of acclimatisation introduced by them during the year, and also on the fact that its prospects altogether were of a highly encouraging character. All this must be most gratifying to the friends of acclimatisation, and the friends of the Society, as it was to himself. He had been an observer of the carefulness and assiduity with which

the Council had attended to their duties from week to week, and to the various subjects discussed. No doubt a great deal of the success of the Society was attributable to the confidence and assurance felt in the fact that the Council attended energetically to the advancement of the objects of the Society. He was well aware that among the most eminent of those who had done so much for the association must be recorded the name of their late president, Mr. Edward Wilson, and he desired to state his concurrence with the sentiment expressed by the Council at the loss of so zealous and experienced a co-operator. At the same time, he congratulated the Society on having secured, as a successor to Mr. Wilson, a gentleman with so high a personal and public reputation as Mr. Haines. No doubt under his auspices, and the active exertions of Mr. Wilson, and such gentlemen as Dr. Black and others who had done so much, the Society would continue to flourish and command the respect of the public with an equal degree of success to that enjoyed during the past year. For himself, he had to thank the Council for having, in accordance with the request made by him at the last annual meeting, offered him ample information to be sent through Her Majesty's Government at home to the British Acclimatisation Society, as to the animals and vegetable objects in this colony which were likely to be suitable for acclimatisation in the mother country and Europe. According, also, to the expressed wish of the Society, he had requested of Her Majesty's Government that the Reports received from other colonies, and Her Majesty's diplomatic representatives abroad with the various Governments with which Her Majesty's Government was in communication, might be sent to this Society. As yet he had received no reply, but he had not the slightest doubt that if replies were not sent through the Government the Society would in due course receive them from the acclimatisation society at home. With these few observations he would call on the secretary to read the report.

The Secretary (Mr. Geo. Sprigg) then read the report. (See p. 5.)

On the motion of Mr. Stutzer, seconded by Mr. Steavenson, the report was adopted.

Dr. Madden moved that the election of the Hon. W. C. Haines, Dr. J. Black, Mr. D. S. Campbell, Mr. Thomas Loader, and Mr. H. E. Watts, as members of the Council, be confirmed.

The motion was seconded by Lieutenant-Colonel Champ, and carried.

Mr. Steavenson then moved, that Messrs. G. S. Lang, J. Sparkes, and A. R. C. Selwyn be elected to fill the vacant seats in the Council.

The motion was duly seconded, and carried.

Dr. T. Black moved an alteration in Rule XII., by which the exact day in November at which the annual meeting should take place might be fixed by the Council. His object was, he said, to secure, if possible, the presence of the Governor.

Lieutenant-Colonel Champ seconded the motion, which was agreed to.

Dr. T. Black said he was happy to state that the hares, quails, and pheasants at Phillip Island were all doing very well; while the salmon at Badger's Creek were going on as prosperously as could be wished. As every one would be glad to hear of the progress and condition of the salmon in Tasmania, he begged to introduce the Hon. Dr. Officer, Speaker of the Legislative Assembly of Tasmania, who would probably give all information on the subject.

Dr. Officer, as indebted to the courtesy of the Society for the opportunity of being present at their annual meeting, could not but express his admiration at their labours of the past year, and his humble wishes for their continued success and usefulness. For him to speak in terms of eulogy of a Society which had made such a name in the world would be superfluous repetition; but he was quite sure he had a few words of interest to say on the subject alluded to. He was very glad that all that could be said respecting the salmon and trout in Tasmania could be summed up in a very few words. Continued success had attended the treatment of the fish. It was quite true that incidents had been met with and actual alarm occasioned in the minds of those concerned; but happily these had all been surmounted in the best way, and he was now able to report that both were in as healthy a condition as could be expected. Trout in their native country were almost more advanced than salmon, and those in Tasmania were, therefore, now more nearly approaching maturity. They were now really respectable little fishes; extremely active, leaping at the fly, and greedily eating anything thrown to them in the shape of food. He was sure that in less than a year these trout would have begun to produce ova, and then after that as many fish could be sent to Victoria as were desired. It was an established fact, he believed, that trout began to deposit eggs when they were only a year old; and as those in Tasmania were already six months old, there would doubtless be a large progeny by this time next year. The salmon were not so large as this, but they grew visibly daily and took all the food offered to them, and for a long time no really natural deaths had taken place. Some had been lost, but only from incidental causes. For instance,

a few were found to have got into the crevices of the box in which they were confined, and thus became incarcerated without the fact being known, and the consequence was some dozen or so perished in that way. With that exception he was not aware of any deaths. They were in a large and commodious pond, with an abundance of running crystal water, so that it was impossible to doubt that an abundant success would result. He heartily congratulated the society on the spirit they had displayed in uniting with Tasmania in effecting a second importation of salmon, and that they had appropriated the liberal sum of £400 for the purpose, and communicated with his excellent friend Mr. Youl, with a view to concert measures with him for obtaining an additional supply. He was not aware of the terms in which the partnership would be entered into—what part would be taken by Victoria and what by Tasmania, but he was sure both would go on as harmoniously as before. Whatever this Society might decide upon—whether they proposed to retain a large portion of the ova in this colony and try their hands at hatching here, or whether they sent the greater part over to Tasmanian care, those in Tasmania would be equally ready to meet Victorian wishes in all respects. Probably he might take the opportunity of offering a little advice on the subject of the fish, but it would be better to confide it to the Council rather than the Society generally, the former having, perhaps, the more practical knowledge. He was not aware that he could say more, but he should be happy to answer any questions.

His Excellency asked what were the number of the salmon.

Dr. Officer replied that they had been counted up to 3,000 or 4,000, but he did not think that was nearly the number. As to the trout, which were confined in a much smaller compartment, no more than 120 fish had been counted for a long time, but when they got larger and came out to feed, there were found to be upwards of 300. So with the salmon, he believed the number would be found larger than that originally calculated on. They had a wonderful art in concealing themselves. Frequently he had walked along the bank of the pond and not seen one, and another day they would be in shoals. They seemed to dart with the speed of lightning under any piece of stone, and so active and so vigilant were they, that he had no doubt they would be too quick for any enemy. No doubt, this time next year we should be catching them on their return trip from the ocean. Out of the whole number of ova, about 18,000 were found to have been never impregnated, and he understood that when they were sent out there were some fears on that score.

He might also state that the Tasmanian Government and Legislature had provided a further sum of £800 this year, which money was in the hands of the Salmon Commission. Money had been sent home to Mr. Youl some months ago for a second importation, and he was glad to find that Victoria was inclined to lend her aid, especially as increased experience promised greater success.

The Hon. W. C. Haines moved a vote of thanks to His Excellency for presiding. They all knew that His Excellency was always ready to lend his cordial assistance when efforts were being made to promote the welfare of this community; and, no doubt, his countenance lent to this meeting would have valuable effect in many ways, and as much as anything in recommending the Society to the people of the colony generally. He trusted the case would be so. He also moved that the thanks of the meeting be given to His Excellency for his kind consideration in asking that this Society should be furnished with the home reports from the various consuls in the different parts of the empire as to the productions, animal and vegetable, of the several countries. These would, no doubt, be of great value to the Council, and enable them to pursue their operations in the best and most advantageous mode. He felt he ought not to introduce any other subject, but would just take the opportunity of expressing his extreme regret at the calamity which deprived the colony of the services of Mr. Wilson. He trusted that that gentleman would be still able to render assistance to the cause of acclimatisation during the time he resided in England, and should be truly thankful if the nature of the calamity did not prevent such being done. As His Excellency had alluded to his (Mr. Haines's) appointment, he might express his feeling that he could only inadequately replace Mr. Wilson. What he could do he would do, and as now he had a little more leisure than he had enjoyed for many years, he would probably be able to do more than he might otherwise have done.

Dr. T. Black seconded the resolution, expressing a hope that His Excellency would often preside under similar circumstances.

His Excellency in acknowledging the compliment, said he wished he had done more to deserve it. He could only repeat what he had said once before, that he had so very little accurate acquaintance with any part of natural history—other pursuits having prevented his acquisition of much experience—that, though often tempted, he thought it best not to be present at their regular meetings.

The proceedings then concluded.

APPENDIX.

CIRCULAR ISSUED BY THE COUNCIL.

Certain circumstances connected with the passing of the vote for the Acclimatisation Society have led the Council to consider it desirable to state a few facts relating to their performance of the duties with which they have been charged.

The Estimates were laid upon the table of the Assembly on the 3rd February. On the 4th, sums amounting to £1,408,515 were voted. Amongst other items was that of £4,000 for the acclimatisation Society, the granting of which was coupled with a condition that £650 should be raised by private subscriptions.

From the responsibility of that condition the Council have no desire to shrink, feeling well aware that from the wide feeling of sympathy with their efforts, a demand can be met, which might have been fatal to almost any other institution receiving Government aid.

The debate on the vote, and the condition accompanying it, however, have led the Council to believe that their transactions are less fully understood than they would wish them to be, and the rapidity with which the Estimates were proceeded with took them so far by surprise as to have prevented them from providing the Government with such statement of their proceedings as would, they believe, have convinced the Legislature not only that the money voted was being well spent, but that no other public money is being expended to better advantage.

The acclimatisation, or rather the introduction and assimilation to a new set of conditions, of every good thing that the world contains, to a country so singularly adapted as Australia to a wide range of products, seems about as legitimate an enterprise as can be conceived.

The gathering together in good condition and in sufficent numbers to establish the species, foreign animals and plants, is necessarily a very slow and delicate process, and much time must obviously be expended before very decided results can be expected. Most of these animals breed only once a year, and their natural increase is therefore tardy, however eminently they may prove themselves adapted to their new home. But a brief outline of what is being done will be found not altogether barren of those results, for the fuller elaboration of which it is only reasonable to wait.

The inauguration of the Acclimatisation Society on its present footing is comparatively recent, as less than three years have elapsed since it was amalgamated with, and undertook the duties of, the Zoological Committee.

Since then, in consequence of the increasing number of animals, and the unhealthiness of the original site of the Zoological Gardens, an entirely new establishment has had to be formed at the Royal Park, involving a very heavy expenditure in fencing, planting, forming excavations for ponds, building superintendent's house, shelter sheds, pens, &c.

The herd of camels brought from India at an expense of £120 per head had become scattered, and were in a fair way of being annihilated, under the various exploratory expeditions. Such of them as could be saved have been collected at Mr. Wilson's station at the Wimmera, where they are now breeding regularly, and forming the nucleus of probably a large herd, available at some future day either for exploration or conveying the produce of remoter stations in the more arid districts.

The alpaca has been a constant source of interest with the Society. Mr. Duffield has been constantly advised with and encouraged in his great experiment, and has stated that but for the co-operative spirit exhibited by the Society, he should have probably transferred his energies to some other country. Meantime, the little flock of llamas and hybrids imported from England have been diligently cared for, and their health and adaptation to the country watched. They have been crossed with pure alpacas, and young ones of the second cross are now being dropped. Since landing their numbers have increased from 19 to 56.

The Angora goat is receiving great attention, and is likely to furnish a very valuable addition to the resources of our graziers, and of exports to our merchants. A considerable number of the best strain of blood has lately been presented by the Acclimatisation Society of France. Pure bred goats are now rapidly multiplying, and they are being crossed with the common goat in considerable numbers, four crosses being found to restore the original quality.

Associated with the Society, an enterprising gentleman at Maryborough has imported a flock of the Cashmere goat, with which he is now experimenting, affording an instance of the manner in which the Society is executing one of its principle functions, in inducing private enterprise to avail itself of the information and organization of the Society.

Various breeds of sheep have been introduced, and are being experimented with, some of them showing signs of a peculiar adaptability to a hot climate.

While devoting this amount of attention to such animals as the camel, the alpaca, the Angora goat, and the sheep, which may be considered as more immediately interesting to the mercantile and pastoral classes, the sportsman has not been forgotten. The fallow

deer, the Indian elk, the beautiful spotted axis deer, have been successfully imported, bred from, and turned loose at Wilson's Promontory, the Wimmera, the Sugarloaf, and the Bunyip. Numerous specimens of the hog deer of India, a beautiful deer from Manilla, and another from Formosa, are still in the possession of the Society, with a view to their multiplication and ultimate release; and fresh importations of the deer tribe are almost of weekly occurrence.

The hare has been sent to the Society by the Zoological Society of London, and has been turned out and is now breeding freely on Phillip Island.

Various breeds of pheasants, partridges, grouse, and quail have been introduced, and some have been liberated. Amongst those may be mentioned the Californian quail, which has bred after being liberated in the Botanical Gardens and Phillip Island, and the Algerine sand grouse, of which a considerable number have been imported, and which from their hardy nature and the similarity of their original climate may be considered highly adapted to this country.

The English wild duck has been imported, has multiplied very freely, and now visits the lagoon at the Botanical Gardens in nearly equal numbers to the indigenous water fowl.

The Egyptian goose has bred at the Royal Park and promises to be thoroughly acclimatised.

The wild pea fowl of Ceylon has thriven and bred in the charge of the Society, and can soon be set at liberty.

The white swan has been introduced in considerable numbers, has bred in the gardens of the Society, and is now distributed in various localities.

Various kinds of foreign doves and pigeons have been introduced and liberated.

The curassow has been obtained, and has bred in the aviaries at the Botanical Gardens.

Of the angler, and lover of fish diet, the Society has not been forgetful. At the recommendation of the Society, successive votes have been placed on the Estimates and passed towards assisting the spirited enterprise of the Tasmanian Government in the introduction of the king of fresh water fishes, the salmon. The gouramie, a fish which has been represented as the best fresh water pond fish in the world, is already in the possession of the Society, having been presented after many trials by a Melbourne firm, and, the difficulties of their introduction having now been overcome, the Society expects soon to obtain further supplies in considerable numbers.

The carp, tench, roach, and dace, as specimens of the not very valuable pond fishes of England, and the gold-fish, have been introduced and distributed in various localities favourable to their multiplication.

But as illustrating by a small success the wonderful results capable of attainment by acclimatisation if adopted on a proper

scale, the Council would refer to the fact of having introduced living specimens of the sea fishes of Europe in the shape of the grey mullet and the edible crab; not indeed in numbers to justify a hope of establishing the breed, but amply suggestive of what will be done in the future.

In a country so subject as this to the ravages of insects, the case of the agriculturist has always been carefully considered. Hundreds of industrious farmers have even this year been ruined by the caterpillar, and similar visitations must necessarily be expected. The introduction of insect-destroying birds has therefore been carefully attended to, and with this has been combined an effort to surround our colonial residences with those interesting associations which constitute no slight portion of the charms with which the name of "home" is ever surrounded. The thrush, the blackbird, the skylark, the starling, the chaffinch, the sparrow, the Chinese sparrow, the Java sparrow, and a most active and interesting bird, the Indian mino, may now be considered thoroughly established, and are rapidly extending by natural means through the Colony. The goldfinch, the linnet, the greenfinch, the yellow hammer, the ortolan, the canary, the robin, and many kinds of the smaller birds of other countries are being accumulated in the aviaries of the Society, and many of them have already bred there.

The nightingale and the hedge-sparrow have been promised us by benevolent ladies at home, and the Queen herself has made an effort to supply us with the rook. To other liberal friends of the cause we are indebted for promises of the gazelle and the edible crab.

As a contribution of very particular interest to the cottager, the introduction of the Ligurian bee may be adduced, that insect being probably, from its industrious and wonderfully prolific properties, the most valuable in the world. This bee is multiplying with almost incredible rapidity, and will soon be accessible to all classes.

A widely extended correspondence and a system of kindly interchange are knitting us in interesting relations with kindred societies in all parts of the world. And to gentlemen in England, France, India, Ceylon, and China, the Society is in particular under deep obligations.

The very great distances at which the operations of the Society have to be carried on, and the difficulty of getting placed in communication with the right class of persons and institutions calculated to aid the enterprise, should argue in favour of a steady persistence of effort, protracted probably over many years, and should show the false policy of any ill-considered interruption of a great national scheme.

The British Government has recently been induced to take up the project of Acclimatisation with an amount of consideration altogether without precedent, the Foreign and Colonial Offices having recently sent to British emissaries in all countries in the

world, a series of questions as to the various desirable natural products of each country, and the Admiralty has issued a circular to all commanders of H.M. ships, directing them to render every service in their power to the cause of Acclimatisation, in the conveyance of specimens.

In almost every colony in these seas Acclimatisation Societies have been founded, most of them paying that of Victoria the compliment of taking it as their model; and with Sydney, Hobart Town, Adelaide, Brisbane, Auckland, Lyttleton, and Dunedin, the Melbourne Society is thus brought into friendly and frequent communication. A French man of war is at the time of the preparation of this statement engaged in bringing the Society specimens of the yâk, the ostrich, and other animals.

There is something so attractive, and at the same time so novel, in the very nature of Acclimatisation, that paragraphs referring to the proceedings of the Society attain a circulation more general than almost any other subject in English and foreign newspapers, and such notices are calculated greatly to interest strangers in the progress of the Colony.

Even the very disasters and deaths inseparable from this kind of experiment are not without their uses, as many interesting specimens have been contributed to the National Museum, from the collection of the Society.

The Council of the Society is composed of gentlemen who have no personal object to serve. They attend the weekly meetings at the cost of considerable valuable time taken from their business hours, and the reports of their meetings will show that the attendance is such as no other non-commercial body in the Colony can boast of.

The Council think that in this brief enumeration of facts they may consider that "results" have been obtained sufficient to carry conviction to any unprejudiced mind, to show how impolitic it would be to allow their proceedings to be rashly or wantonly interferred with, and to justify them in expressing a doubt whether any other public money is as advantageously expended in regard to the future as that portion with which they have been entrusted.

From the very novelty of the project of systematic acclimatisation, and from the almost illimitable range of the objects with which it seeks to deal, a fertile topic is afforded to the sneers of the thoughtless and the misrepresentations of the ill-informed. But in seeking to stock this country with new, useful, and beautiful things, to add to our national wealth, to suggest new forms for our colonial industries, to provide for manly sports, which will lead the Australian youth to seek their recreation on the river's bank and mountain side rather than in the café and casino, to surround every homestead and the path of every wayfarer with new forms of interest and beauty, and to add new elements to the food of the entire people, the Council conceive that they are engaged in a work

sufficiently noble to secure the sympathies of every good man. And of parents in particular, they would ask, what may not be made of this fine Colony, when the seed this Society is now diligently seeking to sow shall have had time to fructify in a complete harvest?

LETTER FROM MR. DUFFIELD.

Melbourne Club, Oct. 18.

"Mr. President and Gentlemen of the Council of the Acclimatisation Society,—I leave Melbourne for Europe by the mail of the 26th inst. I would not do so without first communicating with you on the subject of the undertaking with which I am connected, and asking from you a continuance of the interest you, as a body, have ever shown in the work we are engaged in. The introduction of the alpacas in Victoria has become of late more beset with difficulties than ever. The public, impatient of success, have grown sceptical on the value of the alpaca; and the losses and disasters we have already suffered, as well as yourselves, have thrown a wet blanket on our enterprise. Notwithstanding those disasters, it is our intention to carry out our designs, and I ask you for your support in doing so. The Government has promised to submit a proposition to the Legislative Assembly for helping us with a subsidy of £10 a head for each animal we may introduce, provided the number do not exceed 1,000. I expect that proposition will be discussed during my absence, and I ask you to watch its discussion, so as that at least it shall have fair play. I might appeal to you on account of what we have already done, as well as on account of the promises which have been made to us by no less than three different Administrations at three different times, none of which have been kept, owing to political changes, but which we were led to act upon and did act upon them in doing a great public work. I prefer, however, to enlist your sympathies for our future operations, the more as it is our intention to carry them out on a larger scale than we intended at first. We believe that to ensure a permanent footing for the alpaca in this colony, it will be necessary to farm our flocks ourselves, to form our own alpaca stations, and bear the labour and responsibility of demonstrating that this animal can be established in Victoria as one of the enduring sources of its wealth. To do this will demand considerable money, and a large amount of valuable time. I have asked that the Government should deal with us in this our endeavour to plant a new industry in the colony in the spirit of the Land Act, which grants long leases of land to growers of cucumbers and the cultivation of flax. If the public and the press support us, I believe that the Legislature of the colony will vindicate its own policy, and place ours at least on an equal level with those other undertakings. I ask you, as individuals, and

in your collective capacity, to help in doing this. We have already collected 600 alpacas within 150 miles of the port of shipment. They will thus be prepared for the privations and risks of the sea voyage; but we shall not ship them or make one further move in the matter until the promises of the Government have been ratified by the Parliament. If the Parliament deals with us in a liberal spirit—if the offer of a subsidy is confirmed without any niggardly restrictions, as I believe it will be—I shall then hope to renew my connection with the colony and your Society under more prosperous circumstances than those which have attended our past labours.

"I have, &c.,

(Signed) "A. J. DUFFIELD.

"P.S.—I may state that our agents in Melbourne are Messrs. Clough and Co., with whom we have every reason to be satisfied, and that they will act for me, I believe, with all requisite attention, during the period of my absence."

REPLY.

"Melbourne, October 25.

"To A. J. Duffield, Esq.

"Dear Sir,—On the part of the Council of the Acclimatisation Society, I beg to acknowledge the receipt of your communication, dated the 18th inst., announcing your intended departure for England. The Council is glad to hear from you that, in spite of the disasters and discouragements which you have met with in carrying out your great undertaking, having for its object the introduction of the alpaca into Australia, you are still disposed to persevere in your enterprise, provided that the Government of Victoria carry out the promises made to you by themselves and their predecessors. The Council look forward with great interest to your return to the colony with another flock of alpacas; and it confidently believes that, upon the new footing you give to the undertaking, namely, by the forming of an alpaca station, managed upon your own responsibility, the next attempt will be successful; and that you will live to earn the fruits of your long and patient devotion to the cause of the alpaca. Conceiving the acclimatisation of the alpaca to be of the highest value to the colony, and believing, in spite of past failures, that by greater care in the selection and transport of the animals, and by the choice of a more congenial locality for their reception on their arrival in the colony, the animal may and will be successfully acclimatised in Victoria, the Council will, on its part, cheerfully render you all the assistance in its power towards the accomplishment of your object. With my sincere wishes for your future success,

"I am, &c.

(Signed) "THOMAS BLACK, Vice-President."

COTTON AND ITS CULTIVATION IN PERU.

Read by A. J. DUFFIELD, ESQ., *at a Meeting held March* 30, 1864.

Some ten years ago a friend of mine dug out of an ancient tomb in Antioquia, New Granada, a massive gold plate, which was carved in strange figures, the centre figure being a hippopotamus. That relic of past ages is a direct proof of the theory of Prescott and others, that the civilization of the Aztecs, the Mexicans, the Muiscas, the people of the great interior kingdom of Cundinamarca, as well, perhaps, of the early settlements on the shores of the Great Titicaca lake, came from the Nile. That gold plate was wrapped in a piece of cotton cloth, the workmanship of which was as regular, if not as fine, as any made in Manchester at the present day. I also have examined many of these mural monuments of early Incarial times, and taken from them finely-wrought and brilliantly-dyed cotton-cloths, as well as those string chronicles of early days called quipus, by means of which the Peruvians handed down their history among themselves. These quipus, of many colours and tangled knots, were also made of the finest cotton threads, proving that, centuries ago, cotton growing and cotton manufactures were among the mechanical arts of the children of the sun, and that they brought them to a perfection not surpassed by modern skill or science. Peru is the native soil of one of the finest cotton trees in the world, the length and brilliancy of whose staple have never been surpassed. The members of the royal family, priests, and great officers of state, the Coyas, the Amautas, the Curacas, the Quipucamayus, and the Mamacunas of ancient Peru, were as much indebted for their white robes as, Pliny tells us, were the Egyptian priests to the snowy blossoms of a shrub, and both seem to have been equally skilled in making them. But though great natural forests of cotton abounded, as they still abound, in some parts of Upper and Lower Peru, the cultivation of cotton was carried on to a large extent around the chief centres of population—in Caxalmarca, the sacred valleys of Cuzco and Pachacamac, and along the western coast from the Loa to the Guayaquil. I have travelled over many miles of these old cotton plantations, and examined the splendid, scientific methods adopted for keeping up a plentiful irrigation, without which, on that otherwise barren coast, cultivation of any kind would have been impossible. And while those now dried-up channels, and that hard unyielding soil, are an everlasting disgrace to the gold-grubbing, selfish Spaniards, who blotted out a thousand peaceful scenes, yet, though in ruins, they speak to us wise and lofty words. They say plainly enough—Had the Incas possessed Australia as long as we have, it would by this time have been irrigated from Carpentaria to its opposite extremity, and no form of slavery or oppression exist in making it so. The rivers and creeks of the land would not be, as at present, so many thieves, running off with the fresh water to the sea, but guardians of

it, conducting it to quiet lakes, and preserving it for the service of man, never allowing it to become his master, much less his oppressor and destroyer. Thus the works of the old Incas follow them, and testify that not unto themselves only but unto us they ministered of things belonging unto peace. In those early times, certainly as much as five centuries ago, cotton was cultivated in Portobello, and spun in Guanachani, in Cuba, and Jamaica. The Indians of Uraba were clothed in cotton. Yucatan, Guatemala, Santa Marta, Venezuela, and the Sierra Nevadas—Quito and Cundinamarca, were famous for their cotton plantations and cotton fabrics. Indeed, as far as the old kingdoms of Moxos and the Gran Chaco, even unto Tlaxcala, this raw material was largely cultivated, though it chiefly grew spontaneously. That is, from 16 deg. N. to 36 deg. S. latitude, cotton trees supplied clothing to a hundred millions of our race. No doubt to the cotton tree which yields a splendid yearly harvest for twenty years, together with the remarkable rainless climate peculiar to the Peruvian coast, so suitable to the cultivation of this delicate fibre, are to be attributed the extent and excellence of those once celebrated cotton fields. But though no devastating rain there ever sweeps away the crops, or fierce hurricanes destroy the fruits of the field, although along the whole coast of Peru the atmosphere is almost uniformly in a state of repose, yet the mildness of the elements above-ground is frightfully counterbalanced by their subterranean fury, therefore it must not be supposed that the Peruvian planter had no enemy to encounter, no exertion to put forth, if he would reap a profitable harvest. The effects of earthquakes on the fertility of the soil are so great, that in many cases after very violent shocks the most luxuriant lands have become barren wastes, and for several years afterwards yielded no thriving vegetation. All kinds of grain appear to be susceptible to the changes produced by earthquakes, and if any great commotion takes place beneath a field in full bloom the whole crop will wither in a few days. And with respect to the plantations of the interior, as well as those on the coast of the Caribbean Sea, difficulties and dangers had to be overcome of even greater magnitude than prevailed on the Pacific shores. So that hard work, perseverance, skill, and foresight, were required to keep those sources of wealth from destruction. But now those once mighty fields of floretted snow are either burnt up or become lairs of the jaguar. We have heard of a cotton famine at home producing disease, pestilence, and death. Men have been made to feel that the insanity begotten of greed in depending on one source alone for the supply of a material involving life or death to millions was to have its reward, and that the iniquity of enslaving men in order to make that supply a more exact or accurate commercial transaction was to be overtaken by a terrible avenging Nemesis. We still hear of Lancashire distress, and the protracted strife in America. As yet we do not know whether cotton is again to be king, and his throne to be again planted on the necks of millions of men, women, and

children. We may hope that such will not be the case, and therefore I thought that the subject of cotton-cultivation in Peru, and the probable restoration of those once vast plantations, would be worth at least your hearing. We are informed by the last mail, through *The Times* of Jan. 14, that the cultivation of cotton in Peru is now being carried on to a great extent. The shipments made to England this year are more than three times what they were in 1860, and next year the export will be much larger. In 1860 there were exported 10,000 cwt.; in 1862, 15,000 cwt.; and in 1863 there had already been shipped 31,500 cwt. It is said, from the area of land now planted with cotton throughout Peru, the export of 1864 should be 60,000 cwt. A small quantity from the eastern parts of Peru has been sent down the Amazons, but the expense attending this route is as yet too great to encourage exportation to any great extent. Now I know that even 60,000 cwt. are but a few threads in comparison with what is needed by the 28 millions of spindles of England, to say nothing of those of France. But there can be no doubt that this free-grown cotton will extend its supplies till the old plantations of the Incas are restored, and these, added to those of British India, not only make the cotton supply inexhaustible, but cotton slaves as great an impossibility as a slave chain round a white man's wrist. The cultivation of cotton then in Peru, one of its original sources, is, though of no local interest to us, of intense interest to those who watch over the cultivation of the earth's surface. I believe that the azequias, or canals of the old Incas, will be restored, and that they will fructify millions of acres of free-grown cotton. I believe that the Meta and the Amazons, the Plata and the Magdalena, will soon bear down their free streams many thousand bales of free-grown cotton every year. I believe that the amazing ocean of cotton trees which stretches from the confines of Atacama to the foot of the Andes will soon be made to yield their wealth to us. I believe all this, because I have seen it partially accomplished; and because science, in the hands of practical men, is every day convincing the world more and more that to replenish the earth and subdue it is the service which the Creator requires at the hand of man, and the only service by which the earth shall yield her increase, and the "centuries behind" us their fruits of peace. It is owing to such societies as this that cotton cultivation has been pushed forward with such proud success, not only in Peru and the East Indies, but these colonies also; and I have ventured to broach this subject to you, who are labouring in the same cause, though not from the same pressure of circumstances, that you may be encouraged, take heart, and keep to your work, undismayed by any failure, undaunted by any sneer.

SILK CULTURE.

Read by J. J. STUTZER, ESQ., *at a Meeting held May* 25, 1864.

I have the honour to submit to the attention of the society a few brief observations as to the practicability of utilizing the labour of the inmates of our benevolent and reformatory institutions in conjunction with the introduction of new industries. The object of these remarks is two-fold—first, to attempt making the institutions to some extent self-supporting, and diminishing their heavy cost to the community; and secondly, to secure a certain amount of cheap labour, which will render practicable the introduction of those new means of developing the productive resources of Australia, which in many cases are left untried solely owing to the present excessive rate of wages. Though the present average income of each Australian is probably even now greater than anywhere else in the world, it is considerably less than it has been, and may be expected to suffer a further diminution. Whenever a serious strain upon the national resources shall be felt a hurried economy will have to be enforced. It will be found that hundreds of thousands of pounds will have been wasted in the course of years in the maintenance of prisoners, lunatics, paupers, and destitute children, which might have been saved had the objects of this expenditure been steadily employed in working out their own support. On the Continent, especially under the French and Dutch Governments, the benevolent and reformatory establishments are made, by judicious management, to be to a great extent self-supporting. That at Mettray, a reformatory school for boys, is especially remarkable. At the Breda establishment the cost of each inmate is, or was, about £6 per head. In the north of Holland, on the loose sandy heaths of Overyssel and Groningen, pauper agricultural colonies have been established for half a century, and have succeeded in bringing into cultivation large tracts of land originally worthless, at the same time that the average cost per man has been under 3s. a week. When we come to Australia we find their cost to be in some places double, in others treble, that of similar establishments in Europe. At the Imperial convict establishment of Port Arthur, were the labour of 500 men under vigorous discipline has been always available, its money value is under £3,000 a year. At the Queen's Orphan Asylum, at Hobart Town, which maintains an average of 460 children, the cost was for a long time above £11,000, or at the rate of £26 per head. At the Randwick Asylum, near Sydney, which is much better managed, the cost is still £20 per head. I will not take up your time by multiplying examples, but at once proceed to what I consider as a remedy, confining myself to schools. The great obstacle to the industrial employment of children is the excessive time which is given to book learning. A boy or girl of say 10 years old averages six hours in school, and will probably, if he or she want to get up their lessons, have a couple more hours in the evening. This is about as much

as working a young man continuously 12 hours a day, the result of which is tersely expressed in an old university saying—four hours a day study are four hours, and four more are eight, and four more are four. Four hours a day are as much as ever a child under 12 can give to study with advantage. And this the more, because I am speaking now of schools intended for the operative classes alone, where if the children learn to read, write, and spell well, with the rudiments of geography, and a knowledge of arithmetic up to compound division, they take with them all that they are ever likely to retain in after life. The large amount of spare time which thus becomes disposable should be given to out-door industrial employment. It is all right and proper to give boys and girls an hour or more of play in a day, but it is quite a mistake to suppose that children like only what may be called purposeless play. A boy likes nothing so well as a couple of hours or more of driving cattle, herding cows, tending sheep, cutting wood; he likes the sense of dignity which his employment gives him, and looks on it as a promotion. Girls like tending rabbits or feeding poultry quite as well as they do a mere game at romps. Now when industrial employment is given, as it often nominally is, it is almost always indoors. The children, wearied with lessons, are condemned to be wearied still more with tailoring, cobbling, and stitching, and the result is, that the money value of their work is next to nothing. A few sharp boys occasionally, but rarely, pick up a little artizan knowledge, and thereby go to swell the overgrown city populations, which only make the Australian colonies, like tadpoles, all head, while the farmers are crying out for labour and cannot get it. I beg, therefore, to suggest that wherever new industrial establishments, reformatory schools, and the like shall be henceforward established, it shall be made a *sine quâ non* to have in contiguity to them a tract of land sufficiently large to answer not only as a model farm, but to neutralize a very large proportion of the costs of the establishment. The manner in which the children can be employed may be as follows:—After three hours' schooling, from 8 to 11, they can have an hour's play, and then dine. After dinner they can have an hour's indoor employment or amusement, and then should work from two to three hours in the field. The boys are perfectly able to dig the drains for thorough drainage. There should be a large dairy attached, for milk forms a chief part of the consumption, and while the boys can milk the cows the girls should make the butter and cheese. Both boys and girls should work in the gardens, which should be large enough to supply abundance of vegetables. Such a system would supply the establishment with milk, butter, cheese, and vegetables, and where there is an ample supply of these a great deal of the meat can be dispensed with; at least ninth-tenths of the people of Europe never touch meat, and are just as healthy as the Australians. In conclusion, I come to the subject of the applicability of such a plan to the introduction of new agricultural industries. There are very many

most valuable products which almost every one acknowledges to be valuable, such as hemp, flax, olives, mulberries, &c., but which are kept waiting for years solely on account of the dearness of labour. The agricultural training above recommended would supply this labour. Even a wealthy individual might reasonably object to risk and lose £500 in an experiment intended only for his country's benefit, but such a loss once in a way would not matter much to an establishment supported by the nation. This especially applies to the new industry with which I am best acquainted, and therefore naturally prefer to touch on, the cultivation of silk. The stumbling-block to Australia growing silk in immense quantities has been, and is, the utterly baseless belief that it requires an unusal quantity of specially trained labour. I call this idea utterly baseless, and so says Sir John Young at Sydney, whose practical experience as Governor of the Ionian Islands has been unusually large. He says: "It is a product which involves very little labour; it is committed to young people and to females; in fact the girls of the villages look upon silk as their own peculiar province, and as given them for their own profit and for their own dress. It only occupies 35 or 40 days' labour in the course of the year; and as it is carried on in buildings, it is not exposed to the climate in the same way that many other kinds of cultivation are." A production which occupies only 35 days in the year, and is worked by young girls, certainly should not be excluded from Australia on the score of dearness of labour. But at any rate, this does not apply to it when grown in industrial schools. An acre of land planted with mulberries, for which the month's occupation is supplied gratuitously, is worth permanently at least £50 per annum. Apply this on a large scale, and, combined with other similar resources, you not only create for these institutions constant lucrative endowments, relieving the Government of great expense, but train up a large number of the waste population to a certain knowledge of special employments, which they will ultimately diffuse up and down the length and breadth of Australia.

THE GAME BIRDS OF INDIA.

Read by H. E. WATTS, ESQ., *at a Meeting held June* 22, 1864.

Of all countries there is none which, in my opinion, offers a more promising field for the labours of our Acclimatisation Society than our great Eastern dependency of India. This is pre-eminently the great market for animals in the Eastern world, from which we have to derive what supplies we require, to stock the comparatively scanty and barren lands of Australia. The facilities which already exist for the interchange of productions are greater than those between this continent and any other part of the world. The distance which separates us is comparatively a short one—the communication is frequent, easy, and regular. The steamers of the

Peninsular and Oriental Company have reduced the voyage to one month between Calcutta and Melbourne; and the completion of the great Indian system of railways, now rapidly approaching, has practically made the hitherto almost unknown interior and the hilly country as accessible to us as the seaports. The enterprise and energy of our fellow-countrymen have been developing at a marvellous rate, all the splendid and various natural resources of this magnificent country; and it may be said, indeed, that it is only in these last few years that we have really entered into possession of the noble heritage left to us by the valour and wisdom of our early Indian conquerors and statesmen. Possessed of almost every variety of climate and soil within her wide bounds, the peculiar value of India to this country lies in the fact that a large proportion of her territory bears a close analogy in soil and climate to Australia. The animals which are natural to this region may, therefore, fairly be presumed to be adapted to become denizens also of our continent. For the purposes of our present inquiry, India may be roughly divided into three principal climatic regions—the purely tropical districts of the south and the sea-coasts—the dry, temperate plains of the north and of the central table-land, and the region of snow and ice in the great mountain ranges which form the northern and eastern boundary of our empire. Within bounds so wide, India contains natural productions the most diverse and opposite—animals of the true tropical character, with others of pure alpine habit—the tiger and the elephant, as well as the chamois and the snow-grouse. Nay, sometimes, even under the same parallel, we shall find the most singular assemblage of varied natural forms—oaks, beeches, pines, and rhododendrons, on the hill tops; the bamboo, the mango, and the banana, in the valleys—the degrees of elevation producing the same climatic effects as degrees of latitude in other countries. But it will be impossible, within the limits prescribed to me, that I should be able to give you even a sketch of the vast natural treasures of our Indian empire. I have to do, this evening, only with Indian birds, and among Indian birds, only with those of the gallinaceous order. Of all birds, these may claim to stand in the very first rank, both from their beauty of form and plumage, and their usefulness to man. They are also by far the most interesting to the acclimatiser, from the readiness with which they adapt themselves to changes of climate, and their capacity for domestication. Indeed, if the science of acclimatisation required any arguments in its defence, they would be sufficiently furnished in the examples of what man has done, at various times, with the birds of the gallinaceous order. The turkey and the domestic fowl are among the most precious trophies of acclimatisation. The pheasant, the capercailzie, and the ptarmigan, in the British Islands, are instances of the success with which the game-birds of one country may be trained to inhabit another. Nay, I need not go out of Victoria to find an illustration of the ease with which game-birds may be acclimatised. I am informed that on one

estate alone, their have been killed, in honourable sport, no fewer than *sixty* cock-pheasants during the present season. Who can doubt, indeed, the fitness of this colony to entertain within its bounds, and to naturalize on Australian ground, almost all the members of the great gallinaceous family? Nor is their any class of animals so easily acclimatised. We have only to remember what was the original country of our domestic cocks and hens, of our turkeys and pheasants, to be convinced that nearly all the birds of this family are capable of thriving even in a climate opposed to their natural one. With this, by way of preface, I will now proceed to make mention of such of the game-birds of India as I believe are most valuable to this country, either as objects of sport, for their qualities as food, or as interesting and beautiful ornaments of the silent and dreary Australian bush. I will begin with a bird which the verdict of all Indian sportsmen and epicures invariably places at the head of the game-birds of India: I means the floriken, which is a kind of small and more elegant bustard, inhabiting the plains of India at the base of the Himalayas, with a tolerably wide destribution over the dry, sandy districts of the interior and the north-west. The floriken is a bird of shy habits, and would, perhaps, be difficult to cage, unless previously domesticated. But he is worth all the attention which the Acclimatisation Society can bestow upon him, and once introduced here, would certainly thrive in the same region with our native bustard or wild turkey. Of partridges, there are some half dozen different varieties in India, all of which are more or less desirable for this country. Each of the three great Indian regions has its special kinds; but for us, of course, the most valuable would be those which inhabit the dry plains of the interior, or the upland valleys of moderate elevation. Of these, the black partridge (of which there are two solitary males already in the Acclimatisation Society's collection) is perhaps the best bird for our purposes, being excellent for the table, hardy, and affording capital sport. The *chukore*, or red-leg partridge, whose habitat is a colder region than that of the black partridge, extending northward even to Cashmere, and the lower ranges of the Himalayas, is equally good for the table, but is, perhaps, less prized by the sportsman. The grey partridge of Bengal is comparatively worthless, and should be left alone. Of the other partridges proper, there are the two rarer varieties, which are only found at considerable elevations—the *curria*, which is of a rich chesnut brown colour; and the *lerwa*, or Nepal grouse, which is a splendid game-bird, and of delicious flavour. The two latter are inhabitants of a cold mountainous region, but would probably thrive in our Gipps Land ranges. There is also an Indian wood-partridge, which roosts on trees, and the Thibet partridge (*perdix Hodgsonii*), which would be the most difficult of all to procure. Among the birds not strictly belonging to the natural genus *perdix*, but which are vulgarly classed as partridges, I may mention the painted spur-fowl of

the Indian ghauts (*galla-perdix lunulosa*), which is very handsome, and of fine flavour. There is also its congener, the *kokutree* (*gallo-perdix spadiceus*). But by far the noblest of all the partridge kind is the *Kowk-durra*, or snow-partridge of the Himalayas (*tetrao-gallus Himalayensis*), which is *five* times the size of the common English bird, and of most exquisite flavour. Imagine a partridge as big as a turkey-hen! The *kowk-durra* is of a uniform sober grey colour, the feathers edged with reddish brown. It is not often met with by the Indian sportsman, being an inhabitant of the mountainous slopes of northern Cashmere, the Kohistan, and the higher levels of the Himalaya. It is, however, to be found in the valley of Koonawur, just behind our hill-sanatarium of Simla, where it might be procured with some little trouble. Mr. Vigne, the traveller, carried some of these noble partridges to England, and speaks of them as tolerably well able to endure the hardships of a sea voyage. Another of these giant partridges is *tetrao-gallus Caspius*, called by the Persians *kef-i-derra* or the royal partridge, which inhabits the mountainous region lying south of the Caspian, and eastward to Affghanistan. Of quails, there are several varieties in India, but it seems to me that there are none better than those of our own country. Some of the Indian varieties might be found, however, on trial, to have qualities which would make them a desirable importation for this colony. Of the rarer birds, which partake of the partridge and quail character, the Thibetan sand-grouse (*syrrhaptes Tibetanus*) might be introduced; as well as the *see-see*, or sand-partridge of Nepal and Persia (*ammo-perdix Bonhami*), which is said to be most excellent game. Of the francolins, there is the beautiful *Itraginus cruentus*, or blood-coloured francolin, of the Nepal hills. There is also the Affghan bustard (*otis Macqueeni*) as well as *otis houbara*, both of which are declared to be exceedingly good for the table. These birds might probably be procurable *viâ* Kurrachee and Bombay. The so-called rock-pigeon of India, which is rather a kind of partridge (*Pterocles exustus* and *Pt. fasciatus*) is very common in all the dry, sandy districts of the interior. They afford good sport, and are excellent eating, and ought to be admirably well adapted for the warmer parts of this colony. Coming to the pheasant tribe, we find in the mountains of India some of the most beautiful of all the members of this beautiful and interesting family. If there is one bird more than another, indeed, which demands the immediate attention of the Acclimatisation Society, and which is worthy of all the expense and trouble we can bestow on it, it is the Himalayan pheasant, in all its many varieties. There is the *Khaleej* pheasant which has been lately introduced with success into England; the *pucras*, which is one of the most common about Almorah and the valley of the Doon; the brown Nepal pheasant, the Sylhet pheasant, three feet long, of a glossy velvet black colour—the *Muthoora*, or Chittagong pheasant, also of very large size. Of another genus are the *cheer* (*lophophorus Wallichii*); the *jewari*, or

western horned pheasant (*ceriornis melanocephalus*), found on the slopes of the north-western Himalayas, and easily domesticated. The Nepalese pucras is among the most beautiful of all. There is also the tragopan, or singular horned pheasant (*phasianus satyrus*), which is a most valuable and interesting creature, besides many varieties of *ceriornis*. But king of all pheasants, and by far the most gorgeous member of this family, is the famous *monal*, or Impeyan pheasant (*lophophorus Impeyanus*), whose name signifies the "bird of gold" in its native country. It is not possible by any description to convey any idea of the exquisite hues of this beautiful bird. Its colour is a dark purple, changing into green and gold. It is as big as a hen turkey, of most tender and delicate flesh, and easily domesticated. Unquestionably it is the most valuable of all the Hymalayan birds for the purposes of the acclimatiser, and I trust that it will not be long before our society is able to exhibit some specimens of it in the Royal Park. I have already exceeded my allotted bounds, and will say no more than to urge upon the immediate attention of the society the peculiar claims of the game-birds of India to be added to the scanty list of the game-birds of Australia. There is scarcely any of the birds I have here mentioned which could not be adapted to some part or other of this colony, and I believe that they are worth all the money which we can possibly expend in their introduction.

SOME ACCOUNT OF THE QUININE-YIELDING CHINCHONÆ.

Read by A. J. DUFFIELD, ESQ., *at a Meeting held July* 19, 1864.

There is perhaps no drug which has rendered greater service to man than the febrifugal alkaloid known as quinine, or Peruvian bark; and among the many noble results of the art of acclimatisation may be reckoned that of transplanting chinchona, or quinine-yielding trees, from Peru to Java by the Dutch, and still more successfully to India by ourselves. Quinine is a word derived from the compound Quichua word "quina-quina," which signifies bark of bark; the word quina was corrupted by the Spaniards into china, which still retains its place among homœopathists, but in Peru it is now called cascarilla, which also means bark. About two centuries and a half ago, when the name of Jesuit was suggestive of all that is chivalrous in apostolic Christianity, there lay stretched on a bed in a monastery at Malacotas, a district in Peru some 300 miles south of the equator, a member of that order suffering the terrible agonies of terciana. Very likely the Jesuit father had cured many diseases, and healed many wounds of the Indians of that region, for Jesuits then were masters of many noble arts; and so when he needed help and sympathy in his misery it came in the form of gratitude from these people, who revealed to him the secret of this precious bark. A few years later, the Countess de Chinchona, the wife of the Viceroy of

Peru, lay sick of a fever in Lima, and there was sent, also from Malacotas, a parcel of quina-quina to the Countess's physician, with instructions for its use. It was prescribed for her, and the result was a perfect cure. In 1640 the Countess returned to Europe, carrying with her a quantity of this most precious remedy. Hence it came to be called Jesuits' bark by some, and Countess's bark or Countess's powder by others. It was the Countess who first introduced it to the Old World, and in her honour Linnæus named the genus which yields it, chinchona. The fame of it spread throughout the world; it performed miracles, and among them may be reckoned the planting of patristic Christianity in China. A century and a half ago there was hardly a province in China where a Catholic church did not exist—there was a church within the precincts of the Celestial palace itself—and all those churches may be said to have been built on Peruvian bark. The Emperor's life had been saved by it, and in gratitude to the French Jesuits who introduced it to China, the Emperor allowed them to build as many churches as they pleased throughout the empire. Of course, the usual difficulties arose against the new agent of such mighty cures. France, Spain, Rome, and England, united their noted medical men in its condemnation; and among the common people it was sufficient for the Protestant to decry a thing which the Jesuits patronized. After much angry disputation, and many experiments, the final discovery of quinine, and the completion of its chemical history, was made by the French chemists, Pelletier and Caventon, in 1820. Further discoveries were made nine years later by Pelletier, and the organic constituents of chinchona bark found to be—quina, chinchonia, aricina, quinidia, chinchonidia, quinic acid, tannic acid, kinovic acid, chinchona red, a yellow colouring matter, a green fatty matter, starch, gum, and lignin. I wish all the others had been as easily understood as the last two or three, but I am not responsible for those learned terms. I need not describe quinine, or say anything of its usefulness, or the multitude of circumstances under which it is applied. They are well known. The zone of the chinchonæ extends from 10 deg. N. to 17 deg. S. latitude, following the bend of the Andes, and describing a line of probably nearly 2000 miles. I have seen them at the sources of the Meta, about 8 deg. N.; also on the great Quindio ranges, and they have been specially observed at their extreme southern end by Mr. Markham, a young and ardent traveller, who was employed by the Indian Government to transplant them from their principal native regions to the Neilgherry hills. It is to Mr. Markham's report we are indebted for a minute and able description of these trees, and the localities where their most valuable species are to be found. They flourish in a cool and equable temperature, on the slopes and in the valleys and ravines of the mountains, never descending below an elevation of 2,500ft., and ascending as high as 9000 ft. above thes ea level. The chinchonas, when in good soil and under favourable circumstances, become large forest trees—at the

upper limit they become mere shrubs. The leaves are of every variety of shape and size; the flowers are small, and hang in clusters, like lilacs, generally of a deep rose colour, but those of the species micrantha are entirely white, and they are most deliciously fragrant. The species of chinchona are numerous, probably about 20, but there are only some five which yield the bark of commerce. These, to call them by their English names, are the red, the crown, the carthagena, the grey, and the yellow bark; and they are found in five distinct regions of South America. Humboldt tells us in his *Aspects of Nature* that they grow on mica, slate, and gneiss, from 6 to 8000 ft. above the level of the sea, with a mean temperature between 60 deg. and 65 deg. Fah. He has seen them grow to a height of from 53 ft. to 64 ft., and these young trees, not more than 18 in. in circumference. "This beautiful tree," he says, "is adorned with leaves above 5 in. long, and 2 in. broad, growing in dense forests, and seems always to aspire to rise above its neighbours." One cannot help thinking that it has the power of selecting its associates, for it is always found in close proximity to the groined arches of the fern tree, the graceful traceries of the arborescent passion flowers, and the allied genera of these which form the splendid architecture of the eternal forest. A century and a half after its introduction to Europe, so great had been the destruction of these trees by the bark cutters, that fears were then entertained of their complete destruction, and these fears were but too well grounded, for some of the species are now very rare, and the most valuable of all may be said to be extinct. This is owing to the reckless manner of collecting the bark, which is stripped from the tree, and the tree being left standing, of course it soon perishes altogether. In some districts the Government is able to prevent this wholesale slaughter, by compelling the cascarilleros to fell the tree after stripping it; this secures its reproduction; but I believe the greater portion of bark exported from Peru and Bolivia, particularly the latter, and which is the better of the two, is stripped from trees left standing and to perish. It was partly owing to this consideration, and the desire to place the inestimable remedy in the hands of the millions who live in fever-infested regions, that as early as 1839 it was pressed on the English Government by Dr. Royle to plant the Neilgherries with quinine-bearing trees, and by Dr. Weddell, who accompanied the scientific expedition of the Count de Castelnau, and to whom alone we owe our knowledge of the chinchonæ of Upper Peru and Bolivia, who urged the introduction of these plants into the French colonies. Ten years ago the Dutch began their chinchona plantations in Batavia, and have now some 10,000 plants. Nearly 25 years elapsed before the Indian Government took any effectual means to carry out the great benevolent idea of Dr. Royle, and then it was that Lieutenant Markham was sent to South America to collect chinchona seeds and slips, and carry them to India. This he did in 1860, and the total number of healthy plants conveyed by him and planted in 1862 was 13,700. But

before that, in 1854, the Indian Government had begged from the Java plantations some of their cuttings, which were most liberally given. Owing to the superiority of climate, the Indian Government up to 1862 had succeeded seven times better than the Dutch, and in that year there were actually planted out on the Neilgherry Hills more than 72,000 plants of 11 different species of this invaluable tree. Unfortunately, the principal part of the Dutch plantation is useless, being formed of the worthless species of the C. Pahudiana; but they are remedying their mistakes, and making great progress. Chinchona cultivation is also fairly started in Ceylon, and I have no doubt that in process of time a plantation of 150 acres of the chinchona there will be more profitable than one double the size of coffee. Thus, while three or four earnest, but high-minded men, have toiled and passed through the troubles of hunger and thirst, the sword and nakedness, and the perils of the sea, to do a work which only the law of their own natures imposed upon them, and the reward for which is only what some esteem as empty fame—the world has been blessed, some of its useless soil made fruitful, its naked hills made to laugh and sing, and myriads of men and women, whose lot of life is to labour in fever-smitten swamps, are provided with a power to defeat an insidious enemy which rests not till it has them in the grasp of an agonizing death. These are some of the triumphs of the art of acclimatisation, which give lustre to its labours, and might and dignity to its name.

ENGLAND'S DEBT TO ACCLIMATISERS.

Read by James Smith, Esq., *at a Meeting held July* 19, 1864.

I think it may not be unserviceable to remind those who regard acclimatisation as the new-fangled hobby of a few crochetty enthusiasts, that it has been practised in England for a period of 1200 years—dating from the time at which the first wheat was sown in her soil—and that, up to the commencement of the sixteenth century, at which period great efforts seem to have been made for the introduction of exotic flowers, fruits, and vegetables, the mother country was singularly destitute of all these; her population subsisting, as some of the early settlers of this colony did, upon beef, mutton, and damper. Indeed, there is a striking similarity between the condition of England in the dawn of her civilization and that of Australia at the present time. She was both a pastoral and a gold-producing country; and her exports consisted of gold, silver, tin, copper, wool, and horses. Not to pursue this parallel further, however, I will at once proceed to point out what acclimatisation has done for England in regard to fruits, flowers, and esculents. The very rose which we adopt as a national emblem, and profess to consider so purely English, is an alien, and was brought over from France, Flanders, and Italy. The honeysuckle which garlands the hedgerows and overruns the

porch of the peasant, came originally from North America; while the lavender which the farmer's wife deposits among her snow-white napery in the household linen-chest, is a native of the south of Europe. So, too, are the rosemary, the mignonette, the lily, and the pink. English shrubberies are indebted to Hungary for the "golden tresses" of the laburnum, to Portugal for the laurel, to Italy for the bay tree, and to the Levant for the weeping willow. The common daffodil, "that comes before the swallows' dare," is of Italian lineage, the wild foxglove is a denizen of the Canary Isles, and the passion-flower, with its sacred symbols, is a native of South America. In fact, if you were to strip our English flower gardens, green lanes, woods, and meadows of their exotic decorations, you would rob them of half their beauty, and English descriptive poetry of half its charm. To the best of my belief, England does not possess so much as one indigenous vegetable; and, until the time of the Tudors, what little garden stuff her scorbutic population, did consume was imported from the Netherlands. You may remember that Shakspeare makes Sir Andrew Aguecheek account for the dulness of his mind by observing, "I am a great eater of beef, and I believe that does harm to my wit;" and, in the absence of any succulent vegetables, his excessive consumption of animal food is not at all surprising. Nor, considering their very restricted range of diet, can we feel much surprise at Queen Elizabeth's robust maids of honour making such heavy meals of bread, beef, and beer, as they are reported to have done. About this time, however, it seems to have occurred to our beef-eating, beer-bemused, and slow-witted fore-fathers, that it would be cheaper to import garden seeds than vegetables, and more wholesome to eat newly-cut cabbages, than to feed upon such half-rotten garbage as was brought over from Holland, in the holds of broad-bottomed and slow-sailing luggers; and having once opened their minds to this conviction, they began to cast their eyes over the four quarters of the world in search of vegetables. So, in course of time, they procured brocoli, beans, and cauliflowers from Greece; peas from Spain; carrots and celery from Flanders; asparagus and kidney beans from Asia; lettuce, artichokes, and cabbage from Holland; parsley from Egypt; and potatoes from South America; and thenceforth the kitchen garden formed as indispensable an appurtenance to the mansion and the manor-house as the pleasaunce, the buttery-hatch, or the bowling-green. Of indigenous fruits, also, Old England was lamentably destitute. All she could boast of was a few crude berries, growing wild upon brambles; for I am doubtful whether even the crab was native to her soil. Most of the fruits which now flourish in her gardens, hot-houses, and orchards (none of which fruits, by the way, are said, upon the authority of Mr. Hawthorne, to be comparable in flavour with an American turnip), were introduced between the years 1520 and 1600. Italy sent her the mulberry; Syria the apple and the plum; Portugal the grape; Persia the nectarine and peach; Flanders the gooseberry, the finer descriptions of cherry, and the strawberry; Greece the currant and the apricot; Austria the

quince; Spain the pomegranate, and the "oranges and lemons," so popularly associated with "the bells of St. Clement's;" and North America the raspberry and the walnut. It was early in the same century, too, that England borrowed from the Netherlands, and planted in her southern counties, the most beautiful, and, withal, the most useful, of all creepers—the hop plant. Imagine the condition of the people of England without bitter beer!—and without the means of brewing it, unless by the employment of obnoxious and unpalatable drugs! The beverage which has immortalized the names of Bass and Allsop, which has been the means of strewing the summit of the Rhigi and the slopes of the Pyramids with the vitreous evidences of John Bull's ubiquity; which has made the tropical heat of an East Indian summer endurable; which has imparted its own briskness and sparkle to Australian picnics; and which has given Englishmen of the nineteenth century the new sensation which Xerxes ineffectually sighed for—this beverage, I say, is one of the fruits of acclimatisation, and must be taken credit for accordingly. Fully to appreciate what this beneficent agency has accomplished for the mother country, we have only to picture one of her counties denuded of every natural feature which has been borrowed from abroad. Take the county of Kent, for example, and obliterate from its surface those lovely hop gardens, with their "long-drawn aisles" overrun with a living tracery of green and gold; those leafy orchards, glowing with their ruddy fruitage; those rippling fields of yellowing wheat; those picturesque hedge rows of hazel; those stately gardens at Knowle, Cobham, and Penshurst; those chequered masses of colour which beautify every cottager's patch of homely flowers; and the face of the country would be not merely transformed, but deformed. It would be as unlike the Kent of to-day as a noble fresco would be unlike its former self, after having received a thin coat of whitewash. I leave to other and to abler hands the task of showing what acclimatisation has done for England in so far as the animal kingdom is concerned; for the subject is a wide one, and is entitled to more skilful treatment than I am qualified to bestow upon it. I have confined my attention to one particular only; and I have selected this theme because it appears to me that we ought to derive encouragement here, from the knowledge of what our forefathers accomplished elsewhere, under circumstances especially unfavourable to the work; for I need not remind you, that in the sixteenth century the means of communication between the different countries of the world were few in number, tedious in operation, and liable to all sorts of obstructions. The timid scruples, sordid suspicions, and jealous fears of one nation, frequently prohibited or impeded the exportation of such seeds or plants as were likely to prove beneficial to another; and all foreigners were looked upon as hateful rivals or natural enemies, whom it was lawful to defraud in time of peace, and to plunder and pauperize in time of war. If the stupid and barbarous policy is not wholly exploded, it is, at any rate,

discountenanced by the more enlightened citizens of the more civilized nations of the world in our time; and hence the work of acclimatisation is comparatively easy, and a gratifying reciprocity of feeling and effort is exhibited by its friends, in different countries. In applying ourselves to the work in this colony, we may be animated by such a retrospective glance as that which I have taken at what has been effected in this way, with a view to multiply the means of subsistence and the modes of enjoyment, as well as to augment the attractiveness of the natural scenery and the charms of social life, in England. Coming into the inheritance of these things, both as a matter of custom and right, as such of us did who were born there, we are very apt to take it for granted that they existed from time immemorial, and to think no more of them than we do of the common blessings of light and air. But when we find, upon inquiry and reflection, that the energy, the enterprise, and the forethought of acclimatisers in the sixteenth century mainly contributed to make England the picturesque garden which it is in the nineteenth, we may not unreasonably ask ourselves whether it is not in our power to confer similar obligations upon those who are to come after us in Australia. When we are invited to make some little sacrifices of time and money for posterity, we should reject as a malignant insult the sneering rejoinder of "What has posterity done for us?" The question which each generation has to propose to itself under such circumstances is this, What have preceding generations done for our own? And if any man will deliberately sit down and compute the sum of his obligations—the magnificence of the inheritance he enjoys—the legacy bequeathed to him in art, literature, and science by the illustrious dead;—if he will take into account the inventions which have virtually trebled the term of his existence—which have multiplied his delights and mitigated his sufferings—which have given the day labourer of to-day the command of comforts and enjoyments inaccessible to the most powerful monarchs two centuries ago—which have made life infinitely happier and more beautiful for all, than it was formerly possible to be to the most favoured children of fortune—if he will honestly calculate this debt, "the long result of time," he will be startled by its magnitude, and will feel that nothing but the basest ingratitude or the most degrading selfishness could influence him in refusing to bestow upon posterity the slender pittance it may be in his power to offer, not in requital, but in acknowledgement, of what he owes to those who have departed "to join the majority."

THE CULTIVATION OF THE MULBERRY.

Read by A. MARTELLI, ESQ., *at a Meeting held September* 15, 1864.

"From a ploughed field is not only springing up wheat, but the entire civilization of a country."—LAMARTINE.

Mr. President, Ladies, and Gentlemen,—I would crave your indulgence and attention to this paper on the cultivation of the mulberry, as it is one of great importance to the future welfare of the colony. In support of this remark I may mention that in two provinces of Northern Italy, viz., Piedmont and Lombardy, with an area of about twenty-five millions of acres, that after supplying the home market, the annual value of raw silk and cocoons exported amounts to upwards of six millions sterling. It will be no exaggeration to foresee that Victoria, with a surface of sixty millions of acres, a soil and climate better adapted if anything than that of the North of Italy for the production of Silk, will be in a position, in a few years, with a properly directed movement, to export more than twelve millions worth of silk and cocoons annually. The obstacle to this great success is however not confined to silk alone. The great evil of all countries is the listlessness that pervades the monied classes in all matters relating to agricultural interests, and it is against this apathy that we should endeavour to fight, by setting an example of activity to the poorer classes of the community, and by raising up an intelligent body of men fitted to carry out the projects designed for the furtherance of the cultivation of the soil. Complaint is useless where work is necessary to build up the future greatness of a country. Give a just direction to agricultural progress, specially by promoting the more industrious cultures, amongst which that of silk may be considered as one of the greatest sources of riches to a country, by the large returns on the distribution of a comparitavely small capital amongst the labouring classes, and you will have been worthily assisting in the great work of the erection of the edifice of social happiness and well-being. It will now be necessary to bring under your notice some principles of vegetable physiology, in order that we may draw deductions from them for the practical cultivation of the mulberry. Every tree that grows draws the elements of its existence from the decomposition of mineral and organic substances, by the action of the atmosphere and the dampness of the soil in which it is planted. This is done not only by the exterior roots, but also by the leaves and the skin of the younger branches, Nature beneficently provding the trunk of the tree with a thicker skin to withstand the rigour of the elements. There exists such harmony in the provisions for the growth of trees, that the leaves and roots are working simultaneously in the absorption of the principles necessary for the perfection of their vegetation. Those principles materially aid in the circulation of the sap, which is very rapid in the summer and under favourable circumstances, but it is nearly suspended during the winter months, and the powers of the tree recruited and strengthened for the pro-

duction of vegetation during the next season. There are two saps continually ascending and descending. The ascending saps pass through the wood and give nutriment to the branches and leaves, and the descending ones pass through the skin to the roots, and produce new wood from season to season as the tree grows older. The preservation of the leaves is not so necessary to the existence of a tree as its roots, as from these it derives its principal support and nourishment; it will therefore be gathered from these remarks, that it is impossible to propagate mulberry trees for silk culture by cuttings, but that they must be raised naturally from seeds in order that perfect roots may be formed for the sustenance of the tree in the future periods of its existence, and when it shall be necessary to gather its leaves for the education of the precious worm. As the grand object of the cultivation of the mulberry tree is to fit it for the production of leaves in the least possible time, nothing must be neglected by its cultivator to attain that object, not so much by the expenditure of a large amount of capital as an assiduous study of the necessities of the plant, as no tree in the world yields so large a return to its propagator as this one. The good quality of the ground is certainly of great importance to the prosperity of the tree; but the judicious pruning and training of its branches is of far greater moment, and the excuse of the bad cultivator as to the indifferent quality of the soil only tends to betray his ignorance of the art of cultivating the mulberry. The time for pruning and training the branches greatly depends on the climate and the situation in which the trees are placed. From great experience in the cultivation of the mulberry, I am convinced that the establishment of plantations of these trees will yield large returns, and be of great benefit not only to the agriculturist but to the whole community. The demand for silk produced from the worms fed upon the leaves of the mulberry is always increasing, and I cannot foresee any but the most beneficial results in its general adoption in this country. In the composition of the leaves of the mulberry tree there are five different substances, viz., solid or fibrous, colouring matter, water, and saccharine and resinous or silky matters. The three first substances are not absolutely necessary for the life of the silk-worm. The saccharine matter nourishes and aids in the formation of the animal, and the resinous matter imbibed by the worm from the leaves is accumulated and purified by its peculiar organisation, and collected in the two reservoirs of the worm, to be discharged afterwards through its mouth in the form of silk. The yield of silk will be found in accordance with the presence of more or less of the saccharine and resinous matters in the leaves on which the worm is fed. For instance, the silk produced by the leaves of the black mulberry, which are hard, rough and tenacious, and which was the principal food of worms in the warm countries of Europe, (such as Greece, Spain, Sicily, Calabria, &c.,) is abundant, the thread strong, but very coarse. The worms fed on leaves of the white

mulberry (which has been planted on elevated situations and exposed to a dry wind) produce abundance of silk, strong, very pure, and of very fine quality. It is almost unnecessary to state that the less nutriment there is in the leaves the greater will be the quantity required to perfectly develop the worm. The result is that the worm that is fed on leaves which possess great nutritive power will grow large, and produce less silk than that which is fed on those containing a large amount of resinous matter, although not attaining the same size, as the former is liable to become sick, and its productive powers put out of order. Of the white mulberry there are many varieties, but of these the following 16 are in general use in Italy for grafting stocks, viz. :—1. A foglie nervose ; 2. Bathiany ; 3. Columbassa ; 4. Flava ; 5. Giazzola a foglia doppia ; 6. Integrifolia ; 7. Latifolia ; 8. Macrophylla : 9. Macrophylla grisea ; 10. Mascula pedemontana ; 11. Ovalifolia fructibus albidis ; 12. Piramidale ; 13. Roseo di Lombardia ; 14. Rosea lævigata ; 15. Rouillardi ; 16. Vainissi. For sowing, two are principally used, viz., Morrettiana and common alba. Of those used for grafting the three most generally in favour are the Giazzola a foglia doppia, Mascula pedemontana, and the Roseo di Lombardia, as being more rich in saccharine and resinous matters, and containing less water, &c., than the others. From experiments made with 100 oz. of the fresh gathered leaves of each of these varieties, the yield after being properly dried was found as follows : Roseo di Lombardia, 30 oz. ; Giazzola a foglia doppia, 31 oz. ; and Mascula pedemontana, 36 oz. Another variety of mulberry, the Multicaulis, that was imported from the Island of Luzon, is also very much used for the early education of the silk-worm, but owing to its large leaves it is not adapted to all climates, although it is a splendid stock to graft on any other variety, and well fitted for the formation of hedges, and is excellent food for the very young worms. Having called attention to the physiological principles and different varieties of the white mulberry in greatest repute, I shall endeavour to give directions towards making plantations of this valuable tree. First—With respect to the selection of the ground. A spot of ground should be selected in a situation sheltered from the south wind, dug to the depth of 18 in., and afterwards mixed with a little stable manure, and the surface made perfectly level. Secondly—With regard to the method of sowing the mulberry. The best time for sowing in this climate will be found between the middle of March and the middle of May. The objection I have to spring sowing in in the case of the mulberry is the long drought and prevalent hot winds of the Australian summer, which would require a vast amount of attention and diligence in watering the seedlings. The winter rains, on the contrary, may be easily prevented from injuring the young plants by covering them with straw ; but the choice of season is a matter which may very safely be left to the intelligence of the farmer. A suitable spot being fixed upon and prepared for the reception of the seed, the surface of it should be laid out in beds

about 3 ft. wide, sufficient space being left between each for the passage of a man. The seed should be steeped in water for about 24 hours before sowing, to accelerate its tendency to germinate, and afterwards well mixed with about one-third part of dry sand. This mixture is then to be sown broadcast over the beds, the earth carefully raked over it, and gently patted down with the back of a spade. If the soil is rather hard, a little cut straw sprinkled over it will tend to remedy this defect. If the season is wet with cold nights, it will be found beneficial to prepare a blanket or canvas to be thrown over the ground already sown, supported by pegs, to protect the seeds and young plants from the inclemency of the weather. In the absence of rain, they must be watered with a hand watering-can; and in the event of too much rain, protected with straw or in the manner above stated. As a matter of course, no weeds must be allowed to remain in the beds. Thirdly—The mode of transplanting. The young plants after attaining an age of from 18 to 24 months, may be transplanted to a proper nursery, or in ground prepared for the formation of hedges, according to the following directions. For the nursery it will be necessary to cut longitudinal trenches 15 in. deep by 15 in. wide. The bottom of the trenches should be covered with dead branches to the depth of 2 in. or 3 in., and afterwards filled in with earth nearly to the level of the former surface, for the reception of the roots of the young plants. These plants have generally a fusiform root from which a piece of about 2 in. must be cut off. The plants so prepared should be laid on the surface of the ground in the trench in such a fashion that their upper portions should be supported by the unbroken ground, and the lower portion covered in with some of the earth taken from the trench, which must be slightly compressed with the hand; on this should be placed a layer of stable manure, and finally the remaining portion of the earth taken out of the trench. After the young plants have been set according to these directions, the tops of them should be cut to within six inches of the ground, for the purpose of increasing the strength of the young plant. All the suckers springing up from the plant must be removed except the two strongest, which should be left for the purpose of giving support to the foot of the tree, and when they have gained sufficient strength they should be banked up with earth all round. The distance at which the plants are to be set should be in accordance with the fertility of the soil, but they may be set at a general average of 3 ft. from the lines and 15 in. from each other. No care, trouble, or expense must be spared to keep the ground well moved round the foot of the mulberry, in order to maintain the humidity of the soil so necessary for the production of the vegetation of the tree. Most cultivators are aware that loose earth will retain its natural moisture for a longer period than that which is compressed; it would therefore, be advantageous to the growth of the tree to move the surface of the earth with a rake, in order that the rays of the sun might penetrate to its roots. Heat and humidity are the most

effectual natural agents in the rapid devolpment of vegetation, more especially with regard to the mulberry, which is indigenous to warm climates. In seasons of drought it will be necessary to irrigate the ground along the trenches, and a few days afterwards to rake it over to admit the penetration of the heat, which had been nearly destroyed by the previous irrigation, because the evaporation of the water is creating cold. These directions may perhaps appear minute to persons unacquainted with the great importance of the matter, but I consider they are essential to the successful rearing of the young plants, and if they grow well and prosperous the first year they will be fit to be grafted in the second, and the graft will usually spring up a young tree in the course of the next season. I would not trespass on your patience by extending this paper to any greater length; I shall therefore reserve my remarks on the formation of hedges, the education of the trees, and the rules necessary for pruning, &c., for the next paper that I shall have the honour to bring before you on this subject.

THE FISHERIES OF VICTORIA.

Read by G. S. LANG, ESQ., *at a Meeting held September* 15, 1864.

The object of my present paper is to show how, and how far, our fisheries may be elevated into one of the great industries of the colony. I shall commence simply by a few remarks on the present fish supply of Melbourne.

BAY-FISHING.

From the information already collected as to a very limited portion of the coasts and seas within easy reach of Melbourne, it is established that the supply of fish is practically unlimited. In Port Philip Bay there is an area of over 700 square miles, with coast line of about 130 miles, well supplied with fish; and in Western Port Bay about 300 square miles, one immense fishing-ground, and still more plentifully supplied with better fish, and with a coast line of 120 miles, including French and Philip Islands. Both bays are landlocked, and in every way favourable for fishing. The following are the descriptions of fish found in these bays:—Schnapper, from 2lb. to 20lb., and even 30lb.; rock-cod, flathead, garfish, whiting, silver-fish, mullet, gurnet, ling, perch, mackarel, butter-fish, 10lb. to 20lb.; salmon-trout, white salmon, bream, plaice, flounders and king-fish, also crayfish, shrimps, and oysters. It is very difficult to form even a near approximation to the number of boats and men engaged in fishing. There are 316 licences issued for tents and huts for fishing, and allowing only one boat for each licence, and two and

a-half men for each boat, this will give 790 men. There are thus, it appears, almost at our doors an unlimited supply of fish, plenty of men and boats to catch them, and a large population anxious to purchase; yet the public cannot be supplied except at enormous prices, while the fishermen often cannot sell their fish at all, and then at prices they can barely exist upon. The reason is, that the fishermen have no capital beyond their boats and nets, and are at the mercy of one or two middlemen who keep the trade in their own hands, and fix their own price. If another buyer interferes, they raise the price till he is forced to retire, and then at once lower it to the old scale, tabooing any refractory fisherman, and not buying from him at all, while he is unable to take his fish to Melbourne, and most probably would not find a purchaser if he did. Capital will, no doubt, remedy this to a very great extent in time; but fishermen as a body, are always poor (perhaps because men cease to be fishermen when they rise above poverty), and a remedy that will protect them without preventing the introduction of capital, should be at once applied, and render unnecessary such an association as they have formed, with rules as unnecessarily severe as those of the ancient guilds—enough to destroy any industry. The first step is to establish a fish-market, not only with retail stalls, but with licensed salesmen, conducting business in the same way as at Billingsgate, to whom any boat can safely consign its fish; and there is little doubt that the salesmen would find it their interest to combine with the poorer fishermen in removing the present difficulty, by establishing conveyances for their fish, even if coaches were not laid on for the profit of the carriage, which they most probably would be. It would also be a great boon to the fishermen if certain portions of land in suitable localities were marked off as fishery reserves, and fishermen were allowed to purchase, at a fixed price, sufficient for a house, garden, and nets, after occupying it a certain time, say two years. The land would seldom be of much value for any other purpose, and it would benefit the public most materially, by encouraging men with families to establish themselves permanently as fishermen.

DEEP-SEA FISHING.

The colony will never have anything approaching the full advantage of our fishery resources until capital is applied on a large scale to the deep-sea fishing; and that will be only when the fishing-ground is proved of sufficient extent and there are sufficient capitalists whom the investment would suit. First, the Fishing-grounds.—Besides the Western Port and Port Philip bays, where an ample supply is to be had during the summer months, there are fishing-grounds outside which will yield not only an equally ample supply during the winter months, when fish generally leave the bays for deep water, but supply for an extensive export trade. Besides the schnapper fishing at Queenscliff, which now yields during the summer about 250 tons of

schnapper alone, there is a bank outside where they can be caught at all times of the year. There is also one immense bank extending S. and E. from the eastern entrance of Western Port swarming with schnapper, rock-cod, and other fine fish, that would of itself, even as far as now known, supply a large fishery. It has been ascertained that the banks extending to the eastward of King's Island, Rabbit Island, and Corner Inlet, besides soles, butter-fish, jew-fish, and others, abound in flounders of large size and of the finest quality; and as the Straits average less than forty-five fathoms, and with much sand and shell bottom, most favourable for trawling, we only require proper boats to give us as ample a supply in winter as in summer. In a strait between such rocky coasts as this and Van Diemen's land, with islands cropping up in every direction, there must be extensive areas of rocky and broken ground below water, giving both food and shelter, and forming banks for winter fishing as richly stocked as that to the eastward of Western Port. In the Straits the kingfish and barracouta are in large shoals, and might be caught in quantities infinitely greater than at present. Again, on the south and east of Van Diemen's Land there is a bank covered by the waters of the cold Southern Ocean, cold enough for the finest quality of fish, with which it swarms, and of sufficient extent to supply all the Australian colonies over and over again. This bank is known to extend from twenty-five to thirty miles from the end of Maria Island to Tasman's Peninsula—how much further is unknown. It abounds with trumpeter, running up to sixty and eighty pounds; arbouca, also a large fish, rock-cod, schnappers, flounders, and many other fish of fine quality. This bank is as near Melbourne as the banks that supply London with fresh cod, and traversed by every steamer passing between Hobart Town and Melbourne, so that it is almost as much a Melbourne as a Hobart Town fishing-ground. We have, in fact, sufficient data to prove that the deep waters off the coast are teeming with life. Fish have been found everywhere; and the entire bottom, where sounded, is mixed with shells and seaweed, and where the food is the mouths will be there to eat it. How universally animal life is disseminated in these seas was proved by the wreck of a French whaler, which came ashore to the east and west of Portland in 1848. She left Adelaide to fill up, and was never heard of for years, when she came ashore in pieces, the wood exposed to the water being covered deeply with muscles, &c., while the broken parts were perfectly fresh, showing that she had lain in still water till moved by some current or very deep commotion of the water, on to ground within reach of the surface waves. There is, in fact, every reason to believe that we have under the waters as extensive a field for the profitable exertion of our energies as we have on the land, though hitherto left as utterly useless and unprofitable as were our pastures before a white man trod upon them. Second, the Capitalists.—These will be of two descriptions—first, individuals or companies with consider-

able capital, say £3,000 and upwards, who will have one or more stations ashore, with every appliance for curing as well as fishing; and second, single fishing vessels, which will confine themselves to fishing, selling their fish as far as possible in the Melbourne market, and the remainder to the curers, unless when they can cure on board. The body of the fishing fleet will consist of such single vessels, fitted out by a few individuals, as in the Newfoundland and Scotch fisheries. The cost of a thirty-ton vessel with trawl, well, &c., would be about £400 or £500, and there are many in this community whom such an investment would suit—men in various capacities, who have accumulated money beyond the requirements of their business, which they have now great difficulty in investing profitably. Mining has proved too much of a lottery for most prudent men; agriculture requires personal superintendence, and has generally proved ruinous at least to those not brought up to it; squatting requires too much capital; ordinary shares giving too small a profit. Whereas, a sound fishing-smack, fitted out by a few partners under the Limited Liability Act, insured, and under a skilful master, part owner, would be not only a safe but a profitable investment. Second, the pioneers in establishing a national deep-sea fishery must encounter considerable risk and many difficulties, so that a company such as I have alluded to, and such as is now actually being formed, would be much more suitable for the enterprise than one individual. As this preliminary loss was incurred by me twenty years ago, I shall give the result of my dearly-bought experience for the benefit of these second pioneers. On arriving here in 1841, I had been struck by the fact that there was no article to exchange for the enormous quantities of sugar, tea, and rice, &c., imported from the East; and, further, I learned that the East India Company had for years found a most profitable market for a large quantity of Newfoundland cod, in Mauritius, India, China, and the Phillipines, &c., and had given up the trade only on account of the very long voyage then usual, during which the fish became unsaleable. Having partners to manage my sheep stations, I determined to establish a deep-sea fishery, and addressed a memorial to Lieutenant-Governor La Trobe, pointing out these facts, and the advantages that would arise to the colony. The Government almost at once granted me a squatting licence at the mouth of the Yarra, where I established what I intended should be my head station. I set to work with a body of Scotch Highland fishermen and curers, and, before the season ended, proved to my satisfaction that the supply of schnapper was unlimited, and so cheaply cured that a most extensive and profitable export to the places above-mentioned could be established. The men then offered to hire the boats, and fish for the Melbourne market during the winter, and I agreed, for the sake of keeping them together; but this at once brought them into collision with the other fishermen, and led to my giving up the scheme altogether. These men did not object to the deep-sea fishing, but declared that no gentleman or company had any right to interfere

in supplying Melbourne, and refused to supply any hawker who bought from the "company's" boats, and as my boats could not guarantee a constant supply, my men were stopped. To meet this I established a depôt in Melbourne, and put one of their own countrymen to manage it, but instead of confining himself to his own business, when he did very well he turned it into a general store. On my return from a long exploring voyage I found everything paralyzed; a regular war by the fishermen generally against my men, burning and cutting nets, setting boats adrift, &c.; the men were so interrupted that they demanded daily wages, and the hawkers demanded to be guaranteed a supply, while considerable liabilities had been incurred in the store, and its contents distributed on credit to all the Highlanders in Melbourne. The crisis of 1843 coming, I wound up the fishery and went to the bush, but not before I had ascertained to my perfect satisfaction that there was an opening for a great national fishery. I would suggest that this pioneer fishing company should establish at first, not ten, as they propose, but two stations—one at Queenscliff and the other at the eastern entrance of Western Port or near it; each, of course, supplied with row boats, seines, set nets, drift nets, crab pots, &c.; also appliances for salting, drying, and smoking, and in due time preserving fish in tins—the modern substitute for salting. Each station should have one, or perhaps two, trawling cutters, or, rather, fore-and-aft schooners, as being more easily handled, and first-rate sea-boats, so as to hold their own in any weather. They would thus be able to employ their men in almost any weather, in any wind, and at all seasons, either inside or outside the Heads, and, in case of a large take, could always secure the surplus. In the schnapper fishing, alone, they would have a stand-bye that would secure them a profit; the hawkers and salesmen now object to this fish on account of its weight in proportion to the profit upon it, and only the smaller sizes are acceptable. Now these are not suitable for salting, but a company could keep the curers and preservers in tins going with the large fish, sending the smaller to Melbourne with the general take; in the same way, when the cutter is not trawling she can lay-to on the banks and fill herself with schnapper and rock-cod, either to cure on board or preserve on shore, besides keeping the men employed in the winter when fish have left the bay for the deep water. They should strictly confine themselves to their own particular business on the sea and the beach; they must certainly establish a means of rapid communication with the railway, but even that they should do by contract, if there is no public conveyance; sell the fresh fish in the public market, and the rest through an agent, until the business is in full working order, when they may extend it as they please, and more particularly and legitimately by curing the fish caught by other boats. Let them be content at first with plain bush buildings; they are cheap, and will serve for years. Companies generally neglect their men; it is a great mistake in any business, but more particularly in a fishery, as it is

of vital importance to retain men acquainted with the fishing grounds, tides, and currents. House them comfortably, and give them the best of rations. Give the single men a comfortable barrack, with a cook to look after it, so that they may always be certain of a comfortable meal and dry clothes on coming ashore; they will thus secure the willing services of the best men to be had. A company so begun and prudently conducted will, I have no doubt, not only prove most profitable to the parties engaged but to the colony generally.

It is not the business of the Government to force this or any other industry into existence, but as the fishing grounds are at our doors, most bounteously stocked by nature, while there are both capital and men ready to be employed upon them, it is the legitimate province of the Governments of Victoria and Tasmania to clear the way by a survey of the coasts and straits. Private individuals cannot be expected to spend their capital in making discoveries which at once become public property, as fishing banks inevitably do. Where labour is so high it is of great importance to have the men constantly employed, but until the different banks are laid down they cannot be so. The trawlers cannot work in anything like a heavy sea, but if they knew of a bank in their neighbourhood they could, with the deep-sea line, as long as the vessel could hold her own, actually fill the vessel instead of lying-to idle. The survey of the bank off Tasman's Peninsula alone would well repay the expense of employing a sixty-ton vessel, which would be quite sufficient. There is no doubt that most of the fish come into the bays in summer to spawn, and it is most desirable that both Governments should strictly enforce a close time, and regulate the size of the mesh in all nets, trawlers included, as the wanton destruction now is most sinful.

I hope when the Society has the means that the Council will turn their attention to the introduction of the cod and the herring. Lieut. Maury, in his "Physical Geography of the Ocean," mentions that on the portion of the southern states of America touched by the Gulf stream on its way northwards, the fish are of bright colour but poor quality, and that these southern states are supplied by rail from the states further north, whose coasts are washed by the cold current which flows south from the Arctic Ocean inside of the Gulf stream. It appears from Maury's chart of these seas (No. IX. Sea-drift and Whales) that the whole of the south coast of New Holland is bathed by the waters of the cold Antarctic, so that fish of the finest kind will retain their good qualities. The cod is not only a good fish of itself, superior to any of ours, but the salt-fish of commerce, and if established in these seas, would greatly facilitate the formation of an export trade, and, I think, quite as worthy of attention as the salmon. The roe is so exceedingly minute, that more than nine millions have been counted in one fish; being so fine, it would be laid among the moss in pieces, and one box might contain twelve millions of roe. The sea-water would be sufficiently cold during a great portion of the voyage, certainly after

reaching eighteen degrees south, and as one cask per day of iced sea-water would be ample for a box of cod and one of herring, it appears to me that it is well worthy of an early trial. But whether we introduce cod and herring or not, there is no doubt of the fact that we have fish of such quantity and of such quality, that it only requires that capital and labour be applied with ordinary prudence and sagacity to make our fisheries one of the great interests of the colonies.

MEMORANDUM No. 44.

M

ADMIRALTY,

10th October, 1863.

(*Assistance to be rendered to the Acclimatisation Society.*)

My Lords Commissioners of the Admiralty, having had under their consideration the important question of Acclimatisation, are pleased to direct that so far as is consistent with the requirements of the public service, and upon the distinct understanding that no expense whatever is incurred, every facility is to be given by the Commanding Officers of Her Majesty's ships and vessels to any accredited agent of the Acclimatisation Society, who may apply to them through any of Her Majesty's Foreign Ministers or Consuls, or through the Governor of any of Her Majesty's Colonies, for the transport of specimens.

The annexed copy of a circular addressed by permission of the Secretaries of State for Foreign Affairs and for the Colonies to Her Majesty's Foreign Ministers and Consuls and Colonial Governors, in various parts of the world, will explain the objects which the Society has in view.

By Command of their Lordships,

C. PAGET.

To all Flag Officers, Captains, Commanders-in-Chief, and Commanding Officers of Her Majesty's Ships and Vessels.

LIST OF ANIMALS

In the Royal Park and Botanical Gardens, Melbourne.

22 Camels at Wimmera
Llama alpacas
5 Pure alpacas
11 Ceylon elks
12 Axis deer
20 Hog deer
2 Manilla deer
2 Barnsmyha deer
2 Formosa deer
4 Brahmin cows
1 Chinese buffalo
24 Cashmere goats
18 Angora goats
50 Half-bred do.
50 Common goats
30 Sheep
17 Silver grey rabbits
4 Chinchillas
2 St. Bernard dogs
3 Kangaroos
8 Wallaby
4 Opossums
2 Monkeys
1 Agouti
4 Indian porcupines
2 Moorukes
5 Curassows
9 Ceylon wild peafowl
5 English peafowl
4 Golden pheasants
9 Silver pheasants
6 English pheasants
2 Black Indian partridges
3 Guernsey partridges
4 Ceylon partridges
2 Madagascar quail
6 Chinese quail
5 Indian quail
8 Grohorts
2 Algerine sand grouse
12 White swans
4 Canadian geese
13 Egyptian geese
9 Chinese geese
2 Cape Barren geese
50 English wild ducks
1 Mandarin duck
2 Bahama ducks
13 Carolina ducks
8 Call ducks
3 Mountain ducks
2 Tree ducks
5 Wood ducks
2 Macaws
9 Wonga pigeons
12 Fancy pigeons
6 Bronze wing pigeons
1 Crested pigeon
11 Turtle doves
5 Ground doves
7 Grey Indian doves
9 Green Indian doves
3 Manilla doves
2 Brazil doves
12 Emeus
1 Native companion
12 Black swans
1 Mallee hen
2 Native bustards
3 Curlews
2 Eagle hawks
2 Small hawks
3 Owls
2 Laughing jackasses
30 Magpies
2 Grey African parrots
4 Indian game fowls
2 Houdin fowls
4 Padua fowls
2 Gascon fowls
15 Bantams
6 Common fowls
3 Cardinal birds
6 Indian finches
6 Rockhampton finches
12 Linnets
16 Canaries

6 Hives Ligurian bees

ANIMALS LIBERATED.

At the Botanical Gardens.

18 Canaries
18 Blackbirds
24 Thrushes
6 California quail
60 English wild ducks
35 Java sparrows
4 English robins
8 Turtle doves
50 Mino birds

At Phillip Island.

6 Hares
5 Cape pheasants
8 English pheasants
4 Indian pheasants
8 Ceylon partridges
5 Indian partridges
4 Chinese partridges
70 Chinese quail
28 Tasmanian quail
6 Starlings
10 Algerine sand grouse
6 Wild ducks
5 Pheasants
6 Skylarks
6 California quail
4 Thrushes
4 Blackbirds
1 Pair white swans

At Sandstone and Churchill Islands.

4 Pheasants | 4 Skylarks | 4 Thrushes

At Yarra Bend.

6 Thrushes | 4 Skylarks

NEAR SYDNEY.

9 Thrushes | 4 Skylarks | 10 Blackbirds

AT SUGARLOAF HILL.

5 Ceylon elk | 3 Axis deer

AT WILSON'S PROMONTORY.

4 Axis deer

AT THE ROYAL PARK.

3 Hares
20 Mainas
6 Starlings
60 English sparrows
15 Yellowammers

40 Chaffinches
2 Thrushes
20 Greenfinches
200 Java sparrows
6 Blackbirds

20 Siskin finches
6 Powi birds
3 Chinese pheasants
6 Black birds

AT PENTRIDGE.

40 English sparrows

AT ST. KILDA.

20 Chinese sparrows

AT BALLAARAT.

25 English sparrows | 20 Java sparrows

AT BUNKEP.

13 Fallow deer

ANIMALS SENT AWAY.

TO LONDON.

4 Kangaroos
5 Mountain ducks
200 Murray codfish
22 Black swans
20 Australian quail
14 Eagle hawks
85 Magpies
4 Rosella parrots
6 King parrots
6 Cockatoos
5 Dingos

3 Talegallas
26 Waterhens
4 Kangaroo rats
9 Wombats
2 Cranes
2 Wood ducks
2 Kangaroo dogs
4 Echidna
26 Laughing jackasses
40 Shell parrots

36 Lowry parrots
2 Opossums
22 Wonga pigeons
31 Bronze-wing pigeons
2 Wild ducks
3 Swamp magpies
7 Land rails
4 Sugar squirrels
3 Coots
Some Yarra fish

TO PARIS.

20 Emeus
22 Kangaroos
12 Black swans
3 Cape Barren geese
1 South Australian wombat
4 Native geese

3 Curlews
1 Native crane
8 Murray turtles
2 Wombats
17 Australian quail
4 Laughing jackasses

2 Bronze-wing pigeons
8 Goatsuckers
2 Native companions
14 Rockhampton finches
1 Iguana
4 Opossums

TO ST. PETERSBURG.

2 Kangaroos
3 Black swans

2 Laughing jackasses
2 Wallabies

3 Emeus

TO AMSTERDAM.

3 Water hens | 6 Australian quail

TO ROTTERDAM.

2 Cape Barren geese | 2 Water hens

TO HAMBURGH.

2 Wonga pigeons
2 Black swans

2 Bronze-wing pigeons

2 Kangaroo rats

TO COLOGNE.

2 Black swans
2 Black geese

2 Curlews

2 Water hens

TO COPENHAGEN.

2 Black swans

To CALCUTTA.

24 Black swans	15 Rosella parrots	6 Bronze-wing pigeons
12 Emeus	10 Kangaroos	6 Laughing jackasses
2 Eagles	4 Opossums	20 Shell parrots
6 White cockatoos	1 Dingo	52 Magpies
7 King parrots	1 Wombat	

To MAURITIUS.

2 Black swans	2 Eagle hawks	2 Magpies
1 Kangaroo	9 Fowls	2 Laughing jackasses
2 Cape Barren geese		

To BOURBON.

8 Black swans

To SICILY.

6 Black swans | 14 Native Ducks

To RANGOON.

6 Black Swans

To JAVA.

2 Black swans	2 Cape Barren geese	1 Kangaroo

To BURTENZONG.

2 Black swans	2 Cape Barren geese	1 Kangaroo

To SYDNEY.

2 Angora goats	6 English wild ducks	4 Larks
2 Brush kangaroos	1 Mallee hen	4 Starlings
1 Silver pheasant	10 Blackbirds	2 Ortolans
2 Canadian geese	10 Thrushes	2 Sparrows

To ADELAIDE.

1 Angora goat	2 Thrushes	2 Silver pheasants
2 Blackbirds	3 English pheasants	

To HOBART TOWN.

1 Angora goat | 9 Native bears

To NEW ZEALAND.

3 Thrushes	6 Magpies	4 Opossums

WILSON AND MACKINNON, PRINTERS, COLLINS STREET EAST, MELBOURNE.

Sept. 21, 1945.

26.141

REPORT

OF THE

Acclimatisation Society of Victoria.

AS READ

At the Annual Meeting of the Society, held March 10th, 1871,

at the [illegible] Melbourne.

"[illegible]"

MELBOURNE:

STILLWELL & KNIGHT, PRINTERS, COLLINS STREET EAST.

1871.

Professor J. D. Whitney
with Baron Von Richthofen's
best regards

REPORT

OF THE

Acclimatisation Society of Victoria.

AS ADOPTED

AT THE ANNUAL MEETING OF THE SOCIETY, HELD MARCH 10TH, 1871,
AT THE MECHANICS' INSTITUTE, MELBOURNE.

"Omnis ferat omnia tellus."

MELBOURNE:
STILLWELL & KNIGHT, PRINTERS, COLLINS STREET EAST.
1871.

LIST OF THE OFFICERS

OF THE

ACCLIMATISATION SOCIETY.

Patron.

HIS EXCELLENCY VISCOUNT CANTERBURY.

President.

DR. BLACK.

Vice-Presidents.

DR. VON MUELLER, C.M.G. PROFESSOR McCOY

Hon. Treasurer.

T. J. SUMNER, ESQ.

Members of Council.

HON. A. MICHIE,
COUNT DE CASTLENAU.
F. G. MOULE, ESQ.
HON. DR. DOBSON, M.L.C.
H. P. VENABLES, ESQ., B.A.
DR. JOSEPH BLACK.
G. COPPIN, ESQ.
JOHN STEAVENSON, ESQ.
J. B. WERE, ESQ.
F. C. CHRISTY, ESQ.
ALBERT PURCHAS, ESQ.
GEORGE SPRIGG, ESQ.
ROBERT HAMMOND, ESQ.
CURZON ALLPORT, ESQ.
DR. PUGH.

Hon. Secretary.

ALBERT A. C. LE SOUEF, ESQ.

ACCLIMATISATION SOCIETY OF VICTORIA.

The Annual Meeting of the Acclimatisation Society of Victoria was held at the Mechanics' Institute, Collins-street, on Friday, March 10, 1871.

The President of the Society, Dr. Black, took the chair, and in doing so stated that His Excellency the Governor, who was the Patron of the Society, would have been present but for a prior engagement.

The hon. Secretary, Mr. Le Souef, then read the following report of the Council :—

The Council of the Acclimatisation Society has much pleasure in presenting to the subscribers, the Seventh Report of their proceedings.

Circumstances prevented the issue of the Report for 1869, the usual subsidy having been discontinued for that year, the efforts of the Society were necessarily confined to conserving the animals already in their possession, rather than directed towards the introduction of fresh stock. Last year the Government and Parliament again recognised the useful labours of the Society, the sum of £1,000 was voted towards its maintenance, and £400 has been granted for the first half of the present year. It is much to be regretted that the present list of subscribers is so small, but it is confidently anticipated that an improvement will take place in that respect in future.

Since the last report was published, the Society has lost the valuable services of Mr. George Sprigg as secretary, that gentleman having accepted another position, as in consequence of the loss of a large portion of the income of the Society, the Council were compelled to make the secretaryship an honorary office. On Mr. Sprigg's resignation, Mr. Lissignol was elected as his successor, and after Mr. Lissignol's removal in May last, the services of

Mr. Albert Le Souef, the Usher of the Legislative Council, were secured for the duties of honorary secretary. Under his management the Society bids fair to again become extensively useful.

At the date of the last report, the Society was daily expecting the arrival of some ostriches from South Africa; the birds, four in number, reached Melbourne in safety, and Mr. Samuel Wilson, of Longerenong, kindly undertook their charge. They have now increased to sixteen, and there is every reason to suppose that their numbers will be considerably augmented in the course of this season. So far the experiment has been a marked success. Ostrich farming is a profitable occupation at the Cape Colony, and it is hoped will ultimately become so here. The climate of the Wimmera district appears to be well adapted to their habits; as a proof of which, the young Australian birds are now taller than the parent stock.

The Society has disposed of a number of Angora goats during the last two years, having been compelled to do so, in consequence of their financial position; though much regretted at the time, this must prove of advantage to the colony, as these animals are now in a great many hands, and as all who possess them are fully alive to their value, it is hoped that care and attention will be paid to them. A number of males have been purchased by persons who wished to place them with the common white goat; the cross produces a fine and docile animal. The Society is now in possession of about seventy pure Angoras, the greater number of which are at Mr. Wilson's station, on the Wimmera, a locality in every way suited to them.

The Society has done and is doing all in its power to encourage sericulture in the colony, and to this end has, in conjunction with Dr. Von Mueller, sent white mulberry cuttings and plants to all parts of Victoria. Before this industry can become a commercial success a sufficient supply of food must be provided for the worms, and it is of interest to observe the large number of applications for cuttings to form plantations, and the great desire evinced to test practically so profitable and desirable an industry. Some months ago a box of silk-worm eggs was sent by the Government of India to His Excellency the Governor, who kindly handed them to the Society

for distribution, and lately a supply of very superior Japanese eggs, such as are seldom sold to foreigners, have been forwarded by Dr. Bennett, the Hon. Sec. of the Acclimatisation Society of New South Wales. The Council is in communication with the Hon. Mr. Verdon, one of the Vice-Presidents of the Silk Supply Association of London, and with Mr. Francis Cobb, the hon. secretary of that institution, and have asked the latter gentleman whether it would come within the scope of the operations of the Association to appoint some person in Melbourne to purchase cocoons, as there are a number of people who hold parcels, and are discouraged at not being able to turn the fruit of their labour into money. Until an answer has been received to this letter, the Council is prepared to forward cocoons to London, the sender paying the freight; and would impress upon sericulturists that it is quite unnecessary to reel the silk, as that operation is performed much better in England where machinery exists for the purpose. The Silk Supply Association, in one of their Reports recently published, recognises no less than 36,000 square miles of country in Victoria well suited to the growth of silk, and when the numerous young plantations come into bearing, a great stimulus will be given to this industry, which in all probability will, before many years, add materially to the wealth of the colony. The Council would here express their thanks to the President and Professor M'Coy, for the great interest they have always shown in developing sericulture.

The deer turned out at various times have increased rapidly, the Council have heard from time to time of considerable herds having become established in different parts of the country. The axis deer on the Grampians are numerous and widely spread, and other parts of the colony are stocked with varieties of the same animal. There are at present some surplus deer at the Society's Gardens at the Royal Park, which will be shortly liberated in suitable localities removed from settlement, whilst many have already been turned out this year.

The hares have increased in a very marked manner, and are rapidly extending throughout the country: a few have been lately placed in a district well suited to them, about forty miles from town, and the Council have in addition sent some to Tasmania and

New Zealand, as well as having supplied several applicants in Victoria.

With reference to pisciculture, the Council have to report that considerable progress has been made, notwithstanding several drawbacks and losses. One hundred ova of sea trout were received from the Salmon Commissioners of Tasmania last year, at the proper season, and were successfully hatched at the Royal Park, where they were retained with very small loss until fit for removal; they were then carried to a pond which had been prepared for them; but the water was found to be unsuitable, and a number of deaths occurred in consequence; the remainder were successfully removed without further loss to the head waters of a bright clear stream a day's journey from Melbourne. This experiment has proved that ova may be successfully hatched at the Society's establishment, and the young fish carried to any part of the colony. The Council therefore propose, for the present, to obtain ova from Tasmania rather than to incur the expense of preparing breeding ponds. It is proposed, after hatching the ova at the Royal Park, to distribute the young fish to persons who will place them in enclosed waters adapted for them, and who will engage to prepare ponds to keep fish for breeding purposes, so that the fry may be turned out each year into the open streams.

A large number of brown trout ova were also obtained last spring, and in compliance with previous arrangements were placed in hatching boxes upon a stream some distance up the country, at the station of a Member of the Society, who, at his own expense not only prepared the boxes, but also a pond. The boxes were properly protected so far as could be foreseen. The ova were sucessfully hatched, and the young fish in a fit state for moving, when some person in the absence of the owner cut away the zinc covering from the boxes and removed the young fish. It is disheartening to gentlemen who are spending their time and money in carrying out the objects of the Society to have their ends frustrated by such nefarious conduct. It is to be presumed, however, that the fry have been turned out elsewhere, it is to be hoped, into some stream suitable for them.

Several streams have already been supplied with young trout, and from one of them a fish was taken about six months ago measuring

ten inches in length; it is now exhibited as the first Victorian trout. The Council have just completed at their gardens a breeding pond for perch, and are advised that the parent fish will reach Melbourne from Tasmania on the 10th instant. From this pond the whole of the colony may be supplied. There is no doubt that the introduction of salmon and trout into the rivers of Tasmania, has proved a success. It is reported that large salmon have been seen this season, and trout fishing is now permitted under license. The fish caught some time back in the Derwent, about which a discussion took place, have been admitted to be true salmon; and as they were the young of fish reared in the colony, the acclimatization of them has been accomplished. The Council desire cordially to thank Sir Robert Officer and the Salmon Commissioners for the trout ova and fry they have sent, and also to express their appreciation of the services of the Melbourne Anglers' Protective Society in conserving the native fish.

The zoological element has not been neglected, and proves pleasing and instructive to many thousands of people who visit the Society's Gardens during the course of the year. A considerable measure of success has been achieved in the rearing of pheasants and wild-fowl during the season just passed, about sixty of the former have been reared, principally of the silver variety (*Phasianus Nycthemerus*), some of which have just been liberated. A great number of English and Indian wild duck have also been reared; some of these have been set at liberty in the lake at the Botanic Gardens; about forty young birds have taken flight with the native wild ducks visiting the ponds, and some others have been presented to gentlemen who have sent the Society birds or animals of interest in exchange.

The Council would here desire to mention to their friends in the country, that donations of any native birds or animals, excepting native bears, cats, or opossums, will be gladly received. If not required for the collection at the gardens, they are always useful for the purpose of exchange with other countries.

Since the date of the last Report, a number of pheasants (50 *Phasianus Pictus*), brought out by Captain Jones, of the *Superb*, were purchased partly by the Society, and partly by a gentleman

who has turned them out on his property, and who speaks very encouragingly of their rapid increase; and the Council hear from time to time of the increase of pheasants in other localities.

The Council have sent to San Francisco, California, for a consignment of the splendid mountain quail of that country. And, at the request of the Society, His Excellency the Governor has kindly placed himself in communication with His Excellency Lord Mayo the Viceroy of India, on the subject of procuring partridges, pheasants, and jungle fowl from that country.

From past experience in the operations of the Society, the Council have considered it desirable to solicit, through the medium of the *Field*, and *Land and Water* newspapers in the mother country, the kind donations of animals and birds suitable to this climate, from owners of landed property and others who may possess them.

The Council intend to renew their efforts in the next session of Parliament, to amend the present Game Act. It is their opinion that the swivel gun ought to be at once abolished, as the effect of that weapon is to wound as many birds as are killed; independently to its putting a stop to all legitimate sport.

The Council notice with regret that there is amongst some persons a tendency to decry the cause of acclimatisation, but there are others who take a very different view, and who regard the disinterested labours of the Society as useful in the highest degree. Its sole aim is to benefit the Colony at large, by filling its forests with game, and its rivers and creeks with fish, thereby providing a variety of food and sport for the inhabitants. Its efforts will be better appreciated as time goes on, and as the results become more apparent.

The Council cannot conclude this report without expressing their great obligations to the present Government, and to the late Parliament, for the supplies granted to carry on the work; they would also respectfully wish to thank His Excellency the Governor, the Patron of the Society, for the great interest he has always shown in its proceedings.

The Council are likewise not unmindful of the valuable services in the cause of acclimatisation hitherto rendered by His Excellency Sir Henry Barkly, Governor of the Cape of Good Hope, and there

is every reason to believe that he will still continue to further the interests of the Society, whenever it is in his power to do so. The cordial thanks of the Council are likewise due to our numerous friends, especially to Mr. Edward Wilson, who, though in England, continues to take a lively interest in the objects of the Society, and has recently made a handsome donation to its funds. The Council is also indebted to Mr. Samuel Wilson, for his many services, and to Mr. Kendall, the agent for the P. and O. Company, for his kindness in granting permission on several occasions to send stock free of charge by the mail steamers; the same concession has generally been granted by the agents of the different lines of inter-colonial steamers, for which the Council beg to tender their thanks.

In conclusion, they would express their warm thanks to Dr. Black, the President of the Society, and to Mr. T. J. Sumner, the Honorary Treasurer, for their disinterested and valuable services.

Patron: — HIS EXCELLENCY VISCOUNT CANTERBURY continues to be Patron of the Society, and the following gentlemen are the present Office-bearers :—

DR. BLACK, *President.*
DR. VON MUELLER, C.M.G., *Vice-President.*
PROFESSOR McCOY, *Do.*
T. J. SUMNER, Esq., *Honorary Treasurer.*
HON. A. MICHIE, *Member of the Council.*
COUNT DE CASTLENAU, *Do.*
F. G. MOULE, Esq., *Do.*
HON. DR. DOBSON, M.L.C., *Do.*
H. P. VENABLES, Esq., B.A. *Do.*
DR. JOSEPH BLACK, *Do.*
G. COPPIN, Esq., *Do.*
JOHN STEAVENSON, Esq., *Do.*
J. B. WERE, Esq., *Do.*
F. C. CHRISTY, Esq., *Do.*
ALBERT PURCHAS, Esq., *Do.*
GEORGE SPRIGG, Esq., *Do.*
ROBERT HAMMOND, Esq., *Do.*
CURZON ALLPORT, Esq., *Do*
DR. PUGH, *Do.*
ALBERT A. C. LE SOUEF, Esq., *Hon. Secretary.*

It will be necessary, under Rule 6, that the present Meeting confirm the appointment of the gentlemen who have been elected to the Council to fill vacancies which have occurred since the last Annual Meeting. The Society's Balance Sheet duly audited by Mr. Rucker, public accountant, up to the end of last year, is also submitted to the meeting.

Dr. Von Mueller, C.M.G., Vice-President of the Society, moved the adoption of the Report and Balance-sheet, and in doing so said that it was gratifying to him to witness once more the proceedings of the Annual Meeting, more particularly as the last year closed in prosperity, and the new one had commenced hopefully. He considered that a large share of the present prosperity of the Society was due to the care and interest displayed by Mr. Le Souef; he felt it more his duty to refer to this as he knew from his former experience, as the executive officer of the first Zoological Committee, how much toil and anxiety were involved in such duties. He further wished to observe how large a field of operations there was before the Society; in enhancing the resources of the country, for instance, he thought that careful researches should be instituted in the mode of development of the sturgeon and herring, with a view of learning whether they could possibly be brought to these colonies. There was a time when the transfer of salmon to the distant south was deemed an impossibility, yet through the patient and thoughtful perseverance of Mr. Edward Wilson, Mr. Youl, Sir Robert Officer, Mr. Allport, and other promoters of the great salmon enterprise, it had been triumphantly accomplished. And he would here allude to the opportunities afforded by new Antartic Navigation, for observing the transit of Venus, for perhaps locating the herring in the Antartic Sea. Any increase of food in rivers and seas was effected without any cultural exertion, while the yield of such food, irrespective of its ordinary value, gave so much opportunity for fertilising the land without deprivation of any kind. Even on a small scale, much might be done by merely transferring a basketful of eels to any lagoon or chain of waterholes, which could not be utilised like flowing streams for trout and other superior fish. Already on his suggestion, eels had been taken from Melbourne to the rivers of St. Vincent's Gulf, and the lagoons near King George's Sound. He might here remark

that the new Industrial Museum afforded a splendid opportunity of bringing the commercial products of acclimatisation before the public.

He would also call attention to the fact, that the Society was entitled to the favourable consideration of the Legislature, not merely for the work of universal benefit which it continues to carry out, but also because it maintains a large recreation ground with garden plantations for the use of the general public, which otherwise the large and populous suburbs near the Royal Park would be deprived of; and he might be permitted to state that it would afford him pleasure to continue to aid in the extension of the park plantations. He would remark, in conclusion, that he hoped to be able this year to establish (as long ago recommended in his official reports), test plantations in different climatic localities, one for instance in the Lower Murray Desert, one on the Alpine Highlands, and one in the Fern Tree Gullies. This might give new facilities for local experiments in the cause of acclimatisation.

Mr. PURCHAS seconded the adoption of the Report and Balance-sheet, and in doing so stated that he considered the Report as the most favourable one that had been put forward by the Society for some years.

The motion for the adoption of the Report and Balance-sheet was put to the meeting by the chairman, and unanimously carried.

Mr. S. P. WINTER, of the Wannon, said he would avail himself of this opportunity, to thank the Society for having at the suggestion of the President, given him a very valuable present of six silver pheasants, to send to the Wannon Valley. Having reared within the past four years a large number of English pheasants, from birds imported from England, and having the necessary enclosures, and men who understood the rearing of the young pheasants, he had no doubt he should in due time be able to supply birds and eggs to settlers who would incur the expense of providing proper places for breeding.

Mr. CURZON ALLPORT then addressed the meeting. There was one course, he stated, not referred to in the report just read, and which he thought should be known to the public, namely: that the Council had appointed sub-committees to deal with particular branches of acclimatisation; for instance game birds, fish, &c., the sub-com-

mittee consisting of gentlemen interested in the particular pursuits to which the sub-committee respectively related. That as to the progress of the acclimatisation of fish, to which he had paid more particular attention, the sub-committee had come to the conclusion, that rather than at present incur the expense of preparing and keeping up breeding and rearing ponds, it would be better to subscribe a certain sum per annum towards the cost of the ponds in Tasmania, and obtain from thence a supply of ova in return, which could be hatched at the Royal Park, and the young fish distributed, when ready for removal, as indicated in the Report. By this means the produce of the parent fish might be drafted into the streams each year, instead of risking the increase to comparatively few fish turned loose into a large stream, exposed to all their enemies. Several gentlemen had already, at their own expense, prepared breeding ponds for the reception of fish, some for trout, and others for perch. The sub-committee had just completed a pond at the Royal Park, and he had had the pleasure and satisfaction of placing a number of young perch in it that day, which he had just received from Tasmania, from his brother Mr. Morton Allport; a similar number had also been placed in a pond, prepared by the Hon. A. Michie.

Mr. Coppin remarked, that when in Tasmania, within the last week, a gentleman had killed twenty-five genuine trout there at one day's fishing, which was considered a good basket.

The CHAIRMAN called attention to some specimens on the table, one was a trout (preserved in spirits), the first caught in Riddell's Creek, Mount Macedon, one of the numerous fry placed in the creek upwards of eighteen months ago. There were also some excellent samples of silk, sent by Mrs. Pike, of Toorak, and Mrs. Henley, and Mrs. Talbot, of Richmond. Sericulture he expected to become at no distant date a very important industry.

A discussion of a conversational character ensued relative to the scope and objects of the Society. The chairman stated that the Society, acting on the suggestion of the Government, had some time ago sent over goats, rabbits, pigs, and poultry, to the Auckland Isles, for the sustenance of such persons as were unfortunate enough to be shipwrecked there. Wrecks had occurred on the island since, and the live stock had proved of great benefit.

Mr. WINTER, in answer to the chairman, said that in the Western District he found indigenous birds injurious to his fruit trees, particularly the black magpies. A simple plan of frightening birds away, was a bottle bell hung to the trees, which was made by cutting off the bottom of a champagne bottle, by means of a cotton wick saturated in turpentine, which must be ignited, and the bottle dipped when hot into a bucket of cold water, a piece of hard cork or soft wood suspended from the mouth of the bottle formed a clapper, which was kept in motion by a feather inserted in it. He (Mr. Winter), had found this plan answer very well.

COUNT DE CASTELNAU spoke of a plan said to be adopted by the Malays, that of hanging up a wooden effigy pierced with holes, the wind passing through which, caused most unearthly noises.

Dr. JOSEPH BLACK called attention to the fact, that hares were being frequently killed, and hoped that an expression of disapproval from the Society would have the effect of preventing persons from wantonly destroying those valuable animals, before they had become thoroughly established.

The PRESIDENT said, that the Society had done what it could to punish persons who were caught destroying hares, he was pleased to state that in many parts of the country hares were abundant. If they were allowed to increase unmolested for a couple of years more, the law would be changed, and coursing might be allowed without objection.

Mr. CHRISTY said he had noticed the sparrows doing good service in his garden, by killing the aphis on roses.

Dr. PUGH added, that sparrows sent to a gentleman at Sunbury, had not only done no mischief to the fruit, but cleared the garden of aphis, and been a great benefit in all respects.

Mr. WERE remarked, on the other hand, that according to the testimony of market gardeners, the destructive qualities of the sparrow had far exceeded its beneficial qualities.

The PRESIDENT said that the letters furnished on the subject by market gardeners and others to the Society, came from a small number of persons, and were not all of a trustworthy character. The English people were naturally given to grumbling, and not only

the sparrows but everything else introduced by the Society, would be found fault with by some.

On the motion of Mr. Moule, the appointment of the various gentlemen who had been elected to the Council since the last Annual Meeting, wae confirmed.

There being no other business before the meeting, it closed with a vote of thanks to the Chairman.

Account of Monies received and paid by the Acclimatisation Society of Victoria,

During the period 20th May to 31st December, 1870.

RECEIPTS.	£	s.	d.
Government Grant	1,000	0	0
Subscriptions and Donations	64	12	0
Proceeds of Sale of Stock	34	6	6
Moiety of Fines recovered by the Police	2	0	0
	1,100	18	6
Grazing Fees received on account of the Trustees of the Royal Park	18	12	0
Money received from S. Sohn, of New Caledonia, for purchase of Birds	39	9	6
Balance at the Bank of Victoria, 20th May	117	8	0
	£1,276	8	0

EXPENDITURE.	£	s.	d.
Liabilities incurred *ante* 20th May	355	13	9
Purchase and Transport of Stock	74	0	8
Food and Forage	134	15	11
Wages	170	4	0
Office Expenses, Rent, &c.	70	16	11
Incidental Expenses — Advertising, Printing, Collector's Commission, &c.	65	11	8
Premises, Repairs and Maintenance of Grounds	69	18	8
Repairs to Buggy	6	7	6
On account of Vote to the Fishery Committee	20	0	0
	967	8	8
December 21.			
Cash in the Secretary's hands	3	0	1
Balance at the Bank of Victoria	305	19	3
	£1,276	8	0

Examined and compared with the Society's Books, the Bank Pass-book, and Vouchers, and found to correspond in every particular.

Melbourne, 13*th January*, 1871.

E. F. A. RUCKER, *Auditor.*

ALBERT A. C. LE SOUEF, *Secretary.*

LIFE MEMBERS.

All Members marked thus * pay their Annual Subscription 1so.

Aldworth and Co., Sandhurst	£10	10	0
Armitage, George, Ballarat	10	10	0
Armstrong, W., Hexham	10	10	0
Austin, Thomas, Barwon Park	10	10	0
Bagot, C. N., Melbourne Club	10	10	0
Barkly, His Excellency Sir Henry	42	0	0
*Bear, Hon. J. P., M.L.C.	21	0	0
Bear, Thomas H.; Heidelberg	10	10	0
Black, Dr. Thomas, Melbourne Club	10	10	0
Black, W., Belfast	10	10	0
Borough Council of Sandhurst	10	10	0
Box, H., Little Collins-street West	10	10	0
Boyd and Currie, Collins-street West	10	10	0
Bright Brothers, Messrs. & Co., Flinders-lane	10	10	0
Brown, Lindsay, Garramadda, Wahgunyah	10	10	0
Canterbury, His Excellency Viscount	10	10	0
Catto, John, Newbridge, Loddon	10	10	0
Chambers, H. J., St. Kilda	Services		
Cooper, Sir Daniel, London	37	2	0
Coppin, Geo. S.	10	10	0
Creswick, Borough Council of	10	10	0
Cumming, G., Mount Fyans	10	10	0
Cumming, W., Mount Fyans	10	10	0
Curr, E. M., Queen-street	10	10	0
Dalgety and Co, Messrs., Little Collins-street	10	10	0
Dooker, F. G., Wangaratta	10	10	0
*Falconer., J. J., Bank of Australasia	20	0	0
Fellows, The Hon. T. H.	10	10	0
Firebrace, R. T.	10	10	0
Fussell, R. S. R., Fou Chou dols. 50	11	0	10
Glass, Hugh, 18 A'Beckett-street	21	0	0
Glass, R. J., Waiparella	10	10	0
*Henty, The Hon. S. G., M.L.C.	10	10	0
Hervey, The Hon. M., M.L.C., Melbourne Club	10	10	0
*Hoffmann, W., Bush Back, Essendon	25	0	0
Jamieson, Hugh	10	10	0
Jenner, Hon. C. J., M.L.C.	£10	10	0
Jones, Lloyd, Avenel	10	10	0
*Joshua Bros., William-street	10	10	0
Landells, G. J., Lahore, India	Services		
Layard, C. P., Colombo	Services		
Layard, E. L., Cape Town	Services		
Learmonth, Thomas, Ercildanriley, Portland	10	10	0
Londesborough, The Right Honorable Lord, Carlton Gardens, London	37	10	0
Lyall, W.	10	10	0
Mackinnon, L., "Argus" Office	Services		
Mackenzie, John, 70½ Queen-street	£10	10	0
Macintosh, Alexander, Green Hills, Diggers Rest	10	10	0
Marshall, Captain D, S., "A. H. Badger"	Services		
Martin, Dr., Heidelberg	10	10	0
Matheson, J., Bank of Victoria	21	0	0
McGill, A.	10	10	0
McGregor, Samuel, Belfast	10	10	0
McHaffie, John, Phillip Island	10	10	0
McMullen, J., Union Bank	21	0	0
Molloy, W. T., Balmoral	10	10	0
Mueller, Dr. F. Von, Botanic Gardens	10	10	0
Municipal Council of Ballarat West	20	0	0
Murray, S., Dunrobin	10	10	0
*Nicholson, Germain, Collins-street East	10	10	0
*Officer, C. S., Mount Talbot	10	10	0
*Power, Hon. Thomas H., Hawthorn	10	10	0
Purchas, Albert, Kew	Services		
Ritchie, J., Streatham	10	10	0
*Rostron, John R., Navarre	10	10	0
Rusden, G. W., Brighton	10	10	0
Russell, A. Matuwalloch	10	10	0
*Rutledge, William, Belfast	10	10	0
*Salmon, J. E., S. and A. C. Bank	21	0	0
Sargood, King and Sargood, Flinders-street East	10	10	0
Shoobridge, E., Valleyfield, Tasmania	10	10	0

Simpson, Robert, Lange Kal Kal	£10	10	0
Sladen, Hon. C., M.L.C., Birregurra	10	10	0
Sloan, W. S., Fou Chou, dols. 50	11	0	10
Spowers, Allan, "Argus" Office	10	10	0
Stanbridge, W. E., Daylesford	10	10	0
Staughton, S. T., Little Collins-street West	10	10	0
Stewart, J., Emerdale, Streatham	21	0	0
Strachan, J., London Chartered Bank	21	0	0
Sumner, T. J., 24 Flinders-lane West	10	10	0
Taylor, Frederick, Melbourne Club	£10	10	0
*Taylor, W., Overnewton, Keilor	10	10	0
Templeton, Hugh, Fitzroy	Services		
*Ware, Joseph, Carramut	10	10	0
Wilson and Mackinnon, Collins-street East	42	9	0
*Wilson, Edward, "Argus" Office	21	0	0
Wilson, Samuel, Wimmera	10	10	0
Winter, James, Toolamba, Murchison	10	10	0
Winter, Thomas, Winchelsea	10	10	0
Winter, S. P.	10	10	0
Youl, James, A., Clapham Park, London	Services		

ANNUAL MEMBERS.

Allport, Curzon, Chancery-lane	£2	2	0
Baines, Edward, Little Collins-street	2	2	0
Banks, Bros., Bell and Co., Flinders-lane	2	2	0
Bligh and Harbottle, Flinders-lane	2	2	0
Black, Dr., Bourke-street	2	2	0
Brodribb, K. E., Chancery-lane	2	2	0
Bindon, Judge, St. Kilda	2	2	0
Christy, F. C., Malvern	2	2	0
Evans, G. E., "Argus" Office	2	2	0
Emerald Hill Borough Council	5	0	0
Fiskin, Archibald, Lal Lal	2	2	0
Fraser and Co., Collins-street	2	2	0
Fanning, Nankivell and Co.	2	2	0
Goldsborough and Co., Bourke-street West	2	2	0
Gray, Charles, Nareeb Nareeb	2	2	0
House, Son and Co., Elizabeth-street	2	2	0
Haddon, F. W., "Argus" Office	2	2	0
Governor, His Excellency the	10	0	0
Joshua Bros., William-street	2	2	0
McNaughton, Love and Co.	£2	2	0
Moule, T. G., Market-street	2	2	0
Nicholson, Germain, Collins-street	2	2	0
Paterson, Ray, Palmer and Co.	2	2	0
Power, T. H., Power, Rutherford and Co.	2	2	0
Pugh, Dr., Collins-street	2	2	0
Robertson, Wm., Temple Court	2	2	0
Ryan and Hammond, Bourke-street	2	2	0
Rosser, C. and E., Brunswick	5	0	0
Sloane, Wm. and Co., Collins-street	2	2	0
Sargood, Son and Co., Flinders-street	2	2	0
Stevenson, L. and Sons, Flinders-lane	2	2	0
Sands and McDougall, Collins-street	2	2	0
Small, R. W., Brighton	2	2	0
Sprigg, George, St. Kilda	2	2	0
Venables, H. P., Caulfield	5	0	0
Wilson, Edward, England	2	2	0

DONATIONS.

Alcock and Co., Russell-street	£1	1	0
Anderson and Wright, Flinders-lane	1	1	0
Briscoe and Co., Collins-street East	1	1	0
Courtney, E., Temple Court	1	1	0
Dobson, Hon. Dr., Temple Court	1	1	0
Dunn, Dr. Robert, Maryborough	1	1	0
Grice, Richard, Grice, Sumner and Co.	£1	1	0
Howitt, Dr., Caulfield	1	1	0
McDougall, James, Carlton	1	1	0
Nutt, R. W., Collins-street	1	1	0
Pike, Mrs. J., Toorak	0	10	0

HONORARY MEMBERS.

Allport, Morton, Hobart Town.
Beckx, Gustave, Flinders Lane West.
Biagi, Giuseppe, William Street.
Blanchard, W., Collins Street West.
Bouton, A., Yahoue, New Caledonia.
Buckland, Dr. F., London.
Castelnau, Comte de, Apsley Place.
Chalmers, Dr., New Zealand.
Cleeland, J., Albion Hotel, Bourke-street.
Cooper, Ricardo, Queen Street.
Coste, Professor, Huningue.
Damyon, James, Market Street.
Drouyn, de Lhuys, Paris.
Francis, Francis, London.
Gillanders & Arbuthnot, Calcutta.
Godfrey, Captain J. B., New Zealand.
Graham, James Little Collins Street East.
Grote, Arthur, Calcutta.
Johnston, Clement, Crown Lands Office.
Latham, General.
Madden, Walter, Office of M nes.
Mathieu, A., Yahoue, New Caledonia.
Merryman, Captain, Essex.
Michaelis, Moritz, Elizabeth Street.
Michael, Major, Madras.
McQueen, Captain, "Martha Biraia."
Mullick, Rajendro, Calcutta.
Officer, Sir Robert, Hobart Town.
Ploos Van Amstel, J. W., Collins St. West.
Ramel, Monsieur, Paris.
Rentsch, Samuel, Flinders Street East.
Ridgers, Captain, "Sussex."
Robinson, J., Calcutta.
Salt, Titus, Saltaire, England.
Scholstein, Adolp., Flinders Lane West.
Sclater, Dr. P. L., London.
Shinner, Captain, "Lincolnshire."
Smith, Captain, "Dover Castle"
Squire, Surgeon John, Dinapore.
St. Hilaire, G., Bois de Boulogne, Paris.
Were, J. B., Collins Street West.

THE RULES AND OBJECTS

OF THE

Acclimatisation Society of Victoria.

1. The objects of the Society shall be the introduction, acclimatisation, and domestication of all innoxious animals, birds, fishes, insects, and vegetables, whether useful or ornamental;—the perfection, propagation, and hybridisation of races newly introduced or already domesticated;—the spread of indigenous animals, &c., from parts of the colonies where they are already known, to other localities where they are not known; the procuring, whether by purchase, gift, or exchange, of animals, &c., from Great Britain, the British colonies, and foreign countries;—the transmission of animals, &c., from the colony to England and foreign parts, in exchange for others sent thence to the Society; the holding of periodical meetings, and the publication of reports and transactions, for the purpose of spreading knowledge of acclimatisation, and inquiry into the causes of success or failure;—the interchange of reports, &c., with kindred associations in other parts of the world, with the view, by correspondence and mutual good offices, of giving the widest possible scope to the project of acclimatisation:—the conferring rewards, honorary or intrinsically valuable, upon seafaring men, passengers from distant countries, and others who may render valuable services to the cause of acclimatisation. Objects of Society.

2. A Subscriber of two guineas or upwards annually shall be a Member of the Society; and contributors, within one year, of ten guineas or upwards shall be Life Members of the Society; and any person who may render special services to the Society, by contribution of stock or otherwise, shall be Membership.

eligible for life membership, and may be elected as such by the Council, or by any annual general meeting.

Subscriptions.

3. The annual subscription shall be payable on the 1st day of January in each year, and may be received by any Member of the Council, or the Collector, either of whom on receiving the same shall cause the person so subscribing to be enrolled a member accordingly.

Property vest in Trustees.

4. All the property of the Society, of what nature and kind soever, shall vest in Trustees to be appointed by the Council, for the use, purposes, and benefit of the Society.

Executive Officers.

Council.

5. The Society shall be governed by a Council of eighteen Members, to include a President, two Vice-Presidents, and an Honorary Treasurer, three of whom (viz., those who have attended the fewest Meetings of the Council proportionately since their appointment) shall retire annually, but shall be eligible for re-election. Provided that if any sum of money be voted to the Society by Act of Parliament, or trusts conferred upon the Council by the Government, then it shall be lawful for the Chief Secretary for the time being to appoint, if he consider it expedient, any number of gentlemen, not exceeding three, to act as Members of the Council, and they shall have all the privileges as if otherwise duly elected; and further, to appoint one Co-Trustee, to act in conjunction with the Trustees for the time being of the Society. And provided further, that if the Melbourne Corporation, or any of the adjacent municipalities, shall decide upon expending any sum of money exceeding £100 in any one year, upon the grounds or for the objects of the Society, the Mayor of Melbourne or Chairman of such municipality shall be for such year a Member of the Council, and be at liberty to act in every respect as an ordinary member.

Vacancy in Council, how supplied.

6. In case of a vacancy occurring by the death, resignation, or non-attendance of any Member of Council for the period of two months, the remaining Members may appoint another Member of the Society to be a Member of the Council in the place and stead of the deceased, or resigned, or absenting Member, and such new Member may act until the next annual general meeting. Provided that such vacancy shall not be supplied by the Council except after seven days' notice given

of the new Member to be proposed, and unless in the presence of at least seven Members of the Council.

Quarterly Meetings of the Society.

7. The Society shall hold periodical meetings, at which papers and other communications relating to the objects of the Society, and reports prepared by the Council, shall be received, and such discussions shall be encouraged as may be of value in propagating a knowledge of acclimatisation amongst the Members and the public. And such business generally shall be disposed of as may be brought under consideration by the Council, or by any Member who shall have given seven days' previous notice thereof to the Secretary, or as a majority of two-thirds of the Members present shall see fit to entertain and consider; and each Member shall have the privilege of introducing two friends at such meetings.

Meetings of Council.

8. The Council shall meet at least once a month, and three Members shall form a quorum, and be capable of transacting the business of the Council, subject to such limitations as may be imposed by any bye-law of the Council, or rule, or resolution of the Society, which may be hereafter made.

Powers and Duties of Council.

9. The Council shall have the sole management of the affairs of the Society, and of the income and property thereof, for the uses, purposes, and benefit of the Society; and shall have the sole and exclusive right of appointing a President, Vice-Presidents, and Honorary Treasurer from amongst themselves or the other Members of Society, and also of appointing paid servants, as a manager or secretary, collector, and such other officers, clerks, and labourers, and at such salaries as they may deem necessary, and of removing them if they shall think fit, and shall prescribe their respective duties. And such Council shall have power to consider and determine all matters, either directly or indirectly affecting the interests of the Society, and if they shall think fit so to do, shall bring the same under the notice of the Members of the Society, at any general or special meeting; and to make such bye-laws as they may deem necessary for the efficient management of the affairs and the promotion of the objects of the Society, and for the conduct of the business of the Council, provided the

same are not repugnant to these rules; to appoint one or more sub-committees, for any purpose contemplated by these rules; and generally to perform such acts as may be requisite to carry out the objects of the Society, which bye-laws are to be subject to ratification, or emendation, or ejection, by the next annual or special general meeting of the Society. And it shall be the duty of the Council to exercise the foregoing powers as occasion shall require, and to furnish reports of the proceedings at every periodical and annual meeting of the Society.

Branch Societies, &c.

10. The Society shall have power to affiliate or associate itself with other Societies of kindred objects, and to found Branch Societies if desirable; and the Council shall have power to carry out any arrangements for this purpose, and to furnish any monthly or other reports.

Minutes of Proceedings.

11. Minutes shall be made, in books kept for the purpose, of all the proceedings at the general and special meetings of the Members, and minutes shall also be made of the proceedings of the Council at their general and special meetings, and of the names of the Members attending the same, and such minutes shall be open to inspection by any Member of the Society at all reasonable times.

Moneys to be paid to Treasurer.

12. All subscriptions and other moneys payable to the Society shall be paid to the Treasurer, who shall forthwith place the same in a bank, to be named by the Council, to the credit of the Society; and no sum shall be paid on account of the Society until the same shall have been ordered by the Council, and such order be duly entered in the book of the proceedings of the Council; and all cheques shall be signed by the Treasurer as such, and be countersigned by the President, or one of the Vice-Presidents, or by some other Member of the Council delegated by the Council to act as such.

Annual Meeting

13. An annual meeting shall be held in or about February of each year, and the Council shall report their proceedings during the past year, and shall produce their accounts, duly audited, for publication if deemed desirable; and the meeting shall elect new Members of Council to supply the vacancies therein. And notices of motion must be furnished to the Secretary one day previous to the holding of

such meeting, or such motions may be rejected by the Chairman.

14. All privileges of membership shall cease in case any Member shall be three months in arrear, subject, however, to his restoration on the payment of such subscription as aforesaid, accompanied by satisfactory explanation. Non-payment of Subscriptions.

15. Upon receiving a requisition in writing, signed by twelve or more Members of the Society, or upon a resolution of the Council, the president, or in his absence one of the Vice-Presidents, shall convene a special meeting of the Members, to be held within fifteen days of the receipt by him of such requisition or resolution. Provided always that such requisition and resolution, and the notices thereunder convening the meeting, shall specify the subject to be considered at such meeting, and that subject only shall be discussed at such meeting. Special Meetings of Members.

16. The council or any general meeting of the Society may admit, as Honorary Members, such ladies or gentlemen as may have distinguished themselves in connection with the objects of the Society, or in objects of a kindred nature. Honorary Members.

17. It shall be lawful for any annual or special meeting of the Society to alter, vary, or amend the rules; or to substitute another for any of the same; or to make any new rule which may be considered desirable; if and after a notice specifying the nature of such alteration, variation, amendment, substitution, or new rule, shall have been given to the Secretary fifteen days before the holding of such meeting. And such alteration, variation, amendment, substitution, or new rule shall be valid if carried by a majority of not less than two-thirds of the Members present at such meeting. Power to alter Rules.

LIST OF ANIMALS AND BIRDS

IN THE ROYAL PARK AND ACCLIMATISATION SOCIETY'S GARDENS, MELBOURNE.

11 Brahmin cattle
6 Hog deer
7 Bairanga deer
7 Formosa deer
7 Sambur deer, or Ceylon elk
1 Fallow deer
2 Nylghau
4 Mauritius deer
2 Japanese deer
12 Angora goats
1 Agouti
1 Madagascar sheep
1 Cape sheep
7 Monkeys
5 Wallaby
2 Kangaroo rats
1 Wombat

1 Ceylon porcupine
1 Leopard
2 Native dogs
1 Tasmanian devil
1 English Fox
3 Opossums
3 Emeus
18 English pheasants
22 Silver pheasants
9 Pea fowl
4 Jungle fowl
11 Egyptian geese
6 Geese
About 70 ducks
3 Crown goura pigeons
2 Ravens
1 Mooruke
2 Tallegalla

2 Curassows
3 Kagus
2 Maori hens
1 Kiwi
2 Bleeding heart doves
2 Macaws
3 Blackbirds
2 Jackdaws
1 English magpie
3 Owls
A number of native cockatoos and parrots of different varieties; about the grounds large numbers of doves, and some Californian quail.

ANIMALS LIBERATED.

AT THE BOTANICAL GARDENS.

18 Canaries
18 Blackbirds
14 Thrushes

6 California quail
80 English wild ducks
35 Java sparrows

4 English robins
8 Turtle doves
50 Mainas

AT PHILLIP ISLAND.

0 Hares
5 Cape pheasants
8 English pheasants
4 Indian pheasants
8 Ceylon partridges
5 Indian partridges

4 Chinese partridges
70 Chinese quail
23 Tasmanian quail
6 Starlings
10 Algerine sand grouse
6 Wild ducks

5 Pheasants
6 Skylarks
6 California quail
4 Thrushes
4 Blackbirds
1 Pair white swans

AT SANDSTONE AND CHURCHILL ISLANDS.

Pheasants | 4 Skylarks | 4 Thrushes

AT YARRA BEND.

6 Thrushes | 4 Skylarks

NEAR SYDNEY.

9 Thrushes | 4 Skylarks | 10 Blackbirds

AT SUGARLOAF HILL.

5 Ceylon elk | 3 Axis deer

AT WILSON'S PROMONTORY.

4 Axis deer

AT THE ROYAL PARK.

4 Hares
20 Mainas
6 Starlings
60 English sparrows
40 Chaffinches

2 Thrushes
20 Greenfinches
15 Yellowhammers
200 Java sparrows

6 Blackbirds
20 Siskin finches
6 Powi birds
3 Partridges
6 Pheasants

AT PENTRIDGE.

40 English sparrows

AT ST. KILDA.

20 Chinese sparrows

AT BALLARAT.

5 English sparrows | 20 Java sparrows

AT BUNEEP.

13 Fallow deer

AT CAPE LIPTRAP.

2 Hog deer | 4 Ceylon peafowls, 10 Pigeons | 4 Guinea fowl

AT AUCKLAND ISLANDS.

12 Goats, 3 Geese | 12 Rabbits, 3 Pigs | 6 Fowls, 3 Ducks

AT WESTERNPORT.

7 Sambur deer

AT WIMMERA.

35 Axis deer

AT YERING.

5 Axis deer

AT PLENTY RANGES.

10 Pheasants. | 4 Jungle fowls. | 7 Guinea fowls.

ANIMALS SENT AWAY.

TO LONDON.

75 Kangaroos	26 Waterhens	40 Black ducks
5 Mountain ducks	4 Kangaroo rats	40 Teal
200 Murray codfish	10 Wombats	22 Wonga pigeons
22 Black swans	2 Cranes	31 Bronze-wing pigeons
20 Australian quail	7 Wood ducks	8 Swamp magpies
14 Eagle hawks	2 Kangaroo dogs	2 Iguanas
85 Magpies	4 Echidna	7 Land rails
4 Rosella parrots	26 Laughing jackasses	4 Sugar squirrels
8 King parrots	40 Shell parrots	3 Coots
6 Cockatoos	6 Mallee pheasants	5 Native companions
5 Dingos	36 Lowry parrots	Some Yarra fish
3 Talegallas	12 Opossums	
1 Tasmanian devil	2 Emeus	

TO PARIS.

20 Emeus	3 Curlews	8 Goatsuckers
30 Kangaroos	1 Native crane	2 Native companions
12 Black swans	8 Murray turtles	14 Rockhampton finches
3 Cape Barren geese	2 Wombats	1 Iguana
1 South Australian wombat	17 Australian quail	4 Opossums
4 Native geese	4 Laughing jackasses	20 Black ducks
	2 Bronze-wing pigeons	20 Teal

TO ST. PETERSBURG.

2 Kangaroos, 3 Black swans | 2 Laughing jackasses, 2 Wallabies | 3 Emeus

TO AMSTERDAM.

3 Water hens | 6 Australian quail

TO ROTTERDAM.

2 Cape Barren geese | 2 Water hens

TO HAMBURGH.

2 Wonga pigeons, 2 Black swans | 2 Bronze-wing pigeons | 2 Kangaroo rats

TO COLOGNE.

2 Black swans, 2 Black geese | 2 Curlews | 2 Water hens

TO COPENHAGEN.

2 Black swans

TO CALCUTTA.

24 Black swans	15 Rosella parrots	6 Bronze-wing pigeons
12 Emeus	10 Kangaroos	6 Laughing jackasses
2 Eagles	4 Opossums	20 Shell parrots
6 White cockatoos	1 Dingo	52 Magpies
7 King parrots	1 Wombat	

TO MAURITIUS.

2 Black swans	2 Eagle hawks	2 Laughing jackasses
1 Kangaroo	9 Fowls	4 Wallabies
2 Cape Barren geese	7 Magpies	

TO BOURBON.

8 Black swans

TO SICILY.

6 Black swans | 14 Native ducks

TO RANGOON.

6 Black Swans

TO JAVA.

2 Black swans	2 Cape Barren geese	1 Kangaroo

TO BURTENZONG.

2 Black swans	2 Cape Barren geese	1 Kangaroo

TO SYDNEY.

5 Angora goats	6 English wild ducks	4 Larks
2 Brush kangaroos	1 Mallee hen	4 Starlings
2 Silver pheasants	10 Blackbirds	2 Ortolans
2 Canadian geese	10 Thrushes	A number of sparrows
2 Egyptian geese		

TO ADELAIDE.

10 Angora goats	2 Thrushes	2 Silver pheasants
2 Blackbirds	3 English pheasants	

TO HOBART TOWN.

1 Angora goat	2 Egyptian geese
9 Native bears	Hares
Wild ducks, Indian & English	A number of sparrows.

TO NEW ZEALAND.

3 Thrushes	4 Opossums	Indian and English
6 Magpies	2 Brace of hares	wild ducks

TO FOO CHOW.

48 Wild rabbits	2 Kangaroo	2 Parrots

TO NEW CALEDONIA.

238 Sparrows | 12 Laughing jackasses

AT MR. WILSON'S—LONGERENONG WIMMERA.

16 Ostriches | 55 Angora goats

LIBERATED IN THE BUSH THIS YEAR.

8 Hog deer	80 Pheasants	A number of doves
10 Pea fowl	Several brace of hares	25 Skylarks
20 Guinea fowl		

A large number of hares were likewise distributed last year in various parts of the country, and upwards of 100 Angora goats were disposed of in addition to those enumerated above.

THE PRINCIPAL TIMBER TREES

READILY ELIGIBLE FOR

VICTORIAN INDUSTRIAL CULTURE,

with indications of their native countries and some of their technologic uses.

AN ENUMERATION OFFERED BY

FERD. VON MUELLER,

C.M.G., M.D., Ph.D., F.R.S., F.L.S., F.R.G.S., C.M.Z.S.,
Commander of the Order of St. Jago, Vice-President of the Acclimation Society of Victoria.

This enumeration originated in a desire of the writer to place before his fellow colonists a succinct list of those trees, which in our geographic latitudes can be grown to advantage. Calls for such information arose gradually in the department of the Botanic Garden of Melbourne, not merely because it impressed itself more and more on the mind of every thoughtful settler, that the wanton waste of the native forests should be checked, but that also largely should be added to our timber riches by means of copious and multifarious introductions from abroad, and that for these introductions the widest possible scope should be allowed. Nevertheless this list is far from claiming completeness, either as a specific index, or as a series of notes on the principal technologic applicability of the trees most accessible. Indeed it may be regarded simply as a precursor of larger essays, such as the intended forest administration will gradually call forth. Meanwhile, however, this brief explanatory catalogue may facilitate locally that information, which hitherto was afforded by the authors correspondence chiefly.

It seemed beyond the scope of this writing to tabulate the trees here enumerated, in reference to climatic regions. The inhabitant of colder and moister mountains in this colony, or the settler in the hotter and more arid tracts of country, can readily foresee from the brief geographic notes given with each tree, which kind should be chosen for the spot, selected by him for wood-culture; but if doubts in this respect should arise, the needful advice will readily be offered by the writer.

Though this list was originally prepared and alluded to as an appendage to a lecture* recently delivered at the Melbourne Industrial Museum, I was honored by my colleagues of the Council of the Acclimation Society in their giving publicity to this document along with their last annual report, the Society being quite as anxious

* The Application of Phytology to the Industrial Purposes of Life.

to foster the introduction and multiplication of industrial plants, as the continued acquisition and diffusion of foreign animals of utilitarian importance.

Unquestionably also, the periodical issue of essays on animals and plants, to be introduced or to be diffused, will give additional strength to the Society's labours.

Should, therefore, this small literary offer prove acceptable to the supporters of the Victorian Acclimation Society, then the writer would feel sufficiently encouraged to offer in a similar form,* a list of other plants, recommendable here for more general cultivation; and, although such indices only to some extent contain original research, they are likely to bring together information, more condensed and more recent, than it would be attainable in costly or voluminous works of even several languages, and yet such treating perhaps only of countries with far narrower climatic zones than ours.

Possibly this publication may aid us also to render known our colonial requirements thus far abroad, while it will offer likewise some information to speed interchanges.

For our Industrial Museum and such similar institutions, as doubtless ere long on a limited scale will be connected with each Mechanics' Institute, this unpretensive treatise may help to explain the real wealth, which we possess in our unfortunately almost unguarded forests, or point out the manifold new treasures, which we should raise independently in our woodlands, while also these pages might stimulate both public and private efforts, to provide by timely thoughtulness those increased timber resources, without which the next generations of this land can be neither hale nor prosperous.

I.—CONIFEROUS TREES.

Araucaria Bidwilli, Hook.*

Bunya Bunya. Southern Queensland. A tree 150 feet in height, with a fine grained, hard and durable wood; the seeds are edible.

Araucaria Brasiliensis, A. Rich.

Brazilian Pine. A tree, 100 feet high, producing edible seeds. Ought to be tried in our fern gullies.

Araucaria Cookii, R. Br.

In New Caledonia, where it forms large forests. Height of tree 200 feet.

Araucaria Cunninghami, Ait.*

Moreton-Bay Pine.—East Australia, between 14° and 32° S. latitude. The tree gets 130 feet high. The timber is used for ordinary furniture.

Araucaria excelsa, R. Br.*

Norfolk-Island Pine.—A magnificent tree, sometimes 220 feet high, with a stem attaining ten feet in diameter. The timber is useful for ship-building and many other purposes.

* A short essay on such plants and trees as well was promulgated by the Philos. Society of Victoria 1858, pp. 93—105.

Araucaria imbricata, Pav.

Chili and Patagonia. The male tree attains only a height of 50 feet, but the female reaches 150 feet. It furnishes a hard and durable timber, as well as an abundance of edible seeds, which constitute a main article of food of the natives. Eighteen good trees will yield enough for a man's sustenance all the year round. In our lowlands of comparative slow growth, but likely of far more rapid development, if planted in our ranges.

Callitris quadrivalvis, Vent.

North Africa. A middling-sized tree, yielding the true Sandarac resin.

Cephalotaxus Fortunei, Hook.

China and Japan. This splendid yew attains a height of 60 feet, and is very hardy.

Cryptomeria Japonica, Don.

Japan and Northern China. A slender evergreen tree, 100 feet high. It requires forest valleys for successful growth. The wood is compact, very white, soft and easy to work.

Cupressus Benthami, Endl.

Mexico, at 5 to 7,000′. A beautiful tree, 60 feet high. The wood is fine grained and exceedingly durable.

Cupressus Lawsoniana, Murr.* (*Chamæcyparis Lawsoniana*, Parl.)

Northern California. This is a splendid red-flowered cypress, growing 100 feet high, with a stem of 2 feet in diameter, and furnishes a valuable timber for building purposes, being clear and easily worked.

Cupressus Lindleyi, Klotzsch.

On the mountains of Mexico. A stately cypress, up to 120 feet high. It supplies an excellent timber.

Cupressus macrocarpa, Hartw.* (*C. Lambertiana*, Gord.)

Upper California. This beautiful and shady tree attains the height of 150 feet, with a stem of 9 feet in circumference, and is one of the quickest growing of all conifers, even in poor dry soil.

Cupressus Nutkaensis, Lamb. (*Chamæcyparis Nutkaensis*, Spach.)

North-West America. Height of tree 100 feet. Wood used for boat-building and other purposes; the bast for mats and ropes.

Cupressus obtusa, F. von Muell. (*Retinospora obtusa*, S. & Z.)

Japan. Attains a height of 80 feet; stem 5 feet in circumference. It forms a great part of the forests at Nipon. The wood is white-veined and compact, assuming, when planed, a silky lustre. It is used in Japan for temples. There are varieties of this species with foliage of a golden and of a silvery-white hue.

Two other Japanese cypresses deserve introduction, namely: **Cupr. breviramea** (*Chamæcyparis breviramea*, Maxim.), and **Cupr. pendens**, (*Chamæcyparis pendula*, Maxim.)

Cupressus pisifera, F. von Muell. (*Chamæcyparis pisifera*, S. & Z.)

Japan. It attains a height of 80 feet, producing also a variety with golden foliage.

Cupressus sempervirens, L.

Common Cypress of South Europe. Height of tree up to 80 feet. It is famous for the great age it reaches, and for the durability of its timber, which is next to imperishable. At present it is much sought for the manufacture of musical instruments.

Cupressus thurifera, Humb. B. & K.*

Mexico; 3,000 to 4,500 feet above sea-level. A handsome pyramidal tree, upwards of 40 feet high.

Cupressus thuyoides, Linné. (*Chamæcyparis sphæroidea,* Spach.)

White Cedar of North America; in moist or morassy ground. Height of tree 80 feet; diameter of stem 3 feet. The wood is light, soft, and fragrant; it turns red when exposed to the air.

Cupressus torulosa, Don.*

Nepal Cypress. Northern India; 4,500 to 8,000 feet above sea level. Height of tree 150 feet; circumference of stem, as much as 16 feet. The reddish fragrant wood is as durable as that of the Deodar Cedar, highly valued for furniture. The tree seems to prefer the limestone soil.

Dacrydium cupressinum, Soland.

New Zealand. Native name, *Rimu;* the Red Pine of the colonists. This stately tree acquires the height of 200 feet, and furnishes a hard and valuable wood. With other New Zealand conifers particularly eligible for our forest valleys. A most suitable tree for cemeteries, on account of its pendulous branches.

Dacrydium Franklini, Hook. fil.

Huon Pine of Tasmania; only found in moist forest recesses, and might be planted in our dense fern-tree gullies. Height of tree 100 feet; stem-circumference 20 feet. The wood is highly esteemed for ship-building and various artizan's work.

Dammara alba, Rumph. (*D. orientalis,* Lamb.)

Agath Dammar. Indian Archipelagus and mainland. A large tree, 100 feet high, with a stem of 8 feet in diameter; straight and branchless for two-thirds its length. It is of great importance on account of its yields of the transparent Dammar resin, extensively used for varnish.

Dammara Australis, Lamb.*

Kauri Pine. North island of New Zealand. This magnificent tree measures, under favourable circumstances, 180 feet in height and 17 feet in diameter of stem. The estimated age of such a tree being 700 or 800 years. It furnishes an excellent timber for furniture, masts of ships, or almost any other purpose; it yields besides the Kauri resin of commerce, which is largely got from under the stem of the tree. The greatest part is gathered by the Maories in localities formerly covered with Kauri forests; pieces, weighing 100 lbs., have been found in such places.

Dammara macrophylla, Lindl.

Santa Cruz Archipelagus. A beautiful tree, 100 feet high, resembling D. alba.

Dammara Moorei, Lindl.

New Caledonia. Height of tree about 50 feet.

Dammara obtusa, Lindl.

New Hebrides. A fine tree, 200 feet high; with a long, clear trunk; resembling D. Australis.

Dammara ovata, Moore.

New Caledonia. This tree is rich in Dammar resin.

Dammara robusta, Moore.

Queensland Kauri. A tall tree, known from Rockingham's Bay and Wide Bay. It thrives well even in open, exposed, dry localities at Melbourne.

Dammara Vitiensis, Seem.

In Fiji. Tree 100 feet high; probably identical with Lindley's D. longifolia.

Fitzroya Patagonica, Hooker fil.

Southern parts of Patagonia and Chili. A stately tree, 100 feet high, up to 14 feet in diameter of stem. The wood is red, almost imperishable in the open air or under ground; it does not warp, and is easy to split. It comes into commerce in boards 7 feet long, 8 inches wide, ½ inch thick, and is used for roofing, deals, doors, casks, &c. The outer bark produces a strong fibre used for caulking ships. Like many other trees of colder regions, it would require here to be planted in our mountain forests.

Frenela Actinostrobus, Muell. (*Actinostrobus pyramidalis Miq.*)

From S.W. Australia, though only a shrub, is placed here on record as desirable for introduction, because it grows on saline desert flats, where any other conifers will not readily succeed. It may become important for coast cultivation.

Frenela Macleayana, Parl.

New South Wales. A handsome tree of regular pyramidal growth, attaining a height of 70 feet; the timber is valuable.

Frenela verrucosa, A. Cunn.

Also several other species from Victoria and other parts of Australia are among the trees, which may be utilized for binding the coast and desert sand. They all exude Sandarac.

Ginkgo biloba, L. (*Salisburia adiantifolia, Smith.*)

Ginkgo tree. China and Japan. A deciduous fan-leaved tree, 100 feet high, with a straight stem 12 feet in diameter. The wood is white, soft, easy to work, and takes a beautiful polish. The seeds are edible, and when pressed yield a good oil. Ginkgo trees are estimated to attain an age of 3000 years.

Juniperus Bermudiana, L.*

The Pencil Cedar of Bermuda and Barbadoes. This species grows sometimes 90 feet high, and furnishes a valuable red durable wood, used for boat building, furniture and particularly for pencils, on account of its pleasant odor and special fitness. Many of the plants called Thuya or Biotia Meldensis in gardens, belong to this species.

Juniperus brevifolia, Antoine.

In the Azores up to 4,800′; a nice tree with sometimes silvery foliage.

Juniperus Cedrus, Webb.

A tall tree of the higher mountains of the Canary Islands.

Juniperus Chinensis, L.*

In temperate regions of the Himalaya, also in China and Japan. This tree is known to rise to 75 feet. Probably identical with the Himalayan Pencil Cedar (Juniperus religiosa, Royle); it is remarkable for its reddish close-grained wood.

Juniperus communis, L.

One of the three native coniferæ of Britain, attaining under favorable circumstances a height of nearly 50 feet, of medicinal uses; the berries also used in the preparation of gin.

Juniperus drupacea, Labill. Plum Juniper.

A very handsome long-leaved Juniper, the Habhel of Syria. It attains a height of 80 feet, and produces a sweet edible fruit, highly esteemed throughout the Orient.

Juniperus excelsa, Bieberst.
In Asia Minor, 2 to 6000 feet above the sea level. A stately tree, 60 feet high.

Juniperus flaccida, Schlecht.
In Mexico, 5 to 7000 feet high. A tree of 30 feet in height, rich in resin, similar to Sandarach.

Juniperus fœtidissima, Willd.
A tall beautiful tree in Armenia and Tauria, 5000 to 6,500 feet.

Juniperus Mexicana, Schiede.
Mexico at an elevation of 7000 to 11,000 feet. A straight tree, 90 feet high, stem 3 feet diameter, exuding copiously a resin similar to Sandarac.

Juniperus occidentalis, Hook.
North California and Oregon, at 5000 feet. A straight tree, 80 feet high, with a stem of 3 feet diameter.

Juniperus Phœnicea, L.
South Europe and Orient. A small tree, 20 feet high, yielding an aromatic resin.

Juniperus procera, Hochst.
In Abyssinia. A stately tree, furnishing a hard useful timber.

Juniperus recurva, Hamilton.
On the Himalayas, 10 to 12,000 feet high. A tree attaining 30 feet in height.

Juniperus sphærica, Lindl.
North China. A handsome tree, 40 feet high.

Juniperus Virginiana, L.
North American Pencil Cedar or Red Cedar. A handsome tree, 50 feet high, supplying a fragrant timber, much esteemed for its strength and durability; the inner part is of a beautiful red color, the outer is white; it is much used for pencils.

Libocedrus Chilensis, Endl.
In cold valleys on the southern Andes of Chili, 2000 to 5000 feet. A fine tree, 80 feet high, furnishing a hard resinous wood of a yellowish color.

Libocedrus decurrens, Torr.
White Cedar of California, growing on high mountains. Attains a height of fully 200 feet, with a stem 25 feet in circumference.

Libocedrus Doniana, Endl.
North island of New Zealand, up to 6000 feet elevation. A forest tree 100 feet high, stem 3 feet and more in diameter. The wood is hard and resinous, of a dark reddish color, fine-grained, excellent for planks and spars.

Libocedrus tetragona, Endl.
On the Andes of North Chili, 2000 to 5000 feet. This species has a very straight stem, and grows 120 feet high. The wood is quite white, and highly esteemed for various artisans' work, indeed very precious.

Nageia (Podocarpus) amara, Blume.
Java, on high volcanic mountains. A large tree, sometimes 200 feet high.

Nageia (Podocarpus) cupressina, R. Br.
Java and Phillipine Islands. Height of tree 180 feet, furnishing a highly valuable timber.

Nageia (Podocarpus) dacrydioides, A. Rich.

In swampy ground of New Zealand; the "Kahikatea" of the Maories, called White Pine by the colonists. Height of tree 150 feet; diameter of stem 4 feet. The white sweet fruit is eaten by the natives; the wood is pale, close-grained, heavy, and among other purposes, used for building canoes.

Nageia (Podocarpus) ferruginea, Don.

Northern parts of New Zealand. The Black Pine of the colonists; native name "Miro." Height of tree 80 feet; it produces a dark red resin of a bitter taste; the wood is of a reddish color, very hard.

Nageia (Podocarpus) Lamberti, Klotzsch.

Brazils. A stately tree, yielding valuable timber.

Nageia (Podocarpus) Purdieana, Hook.

Jamaica, at 2500 to 3500 feet. This quick-growing tree attains a height of 100 feet.

Nageia (Podocarpus) spicata, Br.

Black Rue of New Zealand. Tree 80 feet high; wood pale, soft, close and durable.

Nageia (Podocarpus) Thunbergii, Hook.

Cape of Good Hope. A large tree, known to the colonists as "Geelhout"; it furnishes a splendid wood for building.

Nageia (Podocarpus) Totara, Don.*

New Zealand. A fine tree, 120 feet high, with a stem of 20 feet in circumference; it is called mahogany pine by the colonists. The reddish close-grained and durable wood is valuable both for building and for furniture, and is also extensively used for telegraph posts; it is considered the most valuable timber of New Zealand. Many other tall timber trees of the genus Podocarpus or Nageia occur in various parts of Asia, Africa and America, doubtless all desirable, but the quality of their timber is not well known, though likely in many cases excellent. Nageia is by far the oldest published name of the genus.

Phyllocladus rhomboidalis, Rich.

Celery Pine of Tasmania. A stately tree up to 60 feet high, with a stem of 2 to 6 feet in diameter. The timber is valuable for ships' masts. It will only grow to advantage in deep forest valleys.

Phyllocladus trichomanoides, Don.

Celery Pine of New Zealand, northern island; it is also called Pitch Pine by the colonists. This tree attains a height of 70 feet, with a straight stem of 3 feet in diameter, and furnishes a pale close-grained timber, used particularly for spars and planks; the Maories employ the bark for dying red and black.

Pinus Abies, Du Roi.* (*Pinus Picea Linné.*)

Silver Fir, Tanne. In Middle Europe up to 50° N. Lat., forming dense forests. A fine tree, already the charm of the ancients, attaining 200 feet in height, and 20 feet in circumference of stem, reaching the age of 300 years. It furnishes a most valuable timber for building, as well as furniture, and in respect to lightness, toughness and elasticity it is even more esteemed than the Norway Spruce, but is not so good for fuel or for charcoal. It also yields a fine white resin and the Strassburg turpentine, similar to the Venetian.

Pinus Abies var. Cephalonica, Parlatore. (*Pinus Cephalonica,* Endl.)

Greece, 3 to 4000 feet above the sea. A tree 60 feet high, with a stem circumference of 10 feet. The wood is very hard and durable, and much esteemed for building.

Pinus Abies var. Nordmanniana, Parlatore. (*P. Nordmanniana,* Steven.)

Crimea and Circassia, 6000 feet above the sea. This is one of the most imposing firs, attaining a height of 100 feet, with a perfectly straight stem. It furnishes a valuable building timber.
The Silver Fir is desirable for our mountain forests.

Pinus alba, Ait.

White Spruce. From Canada to Carolina, up to the highest mountains. It resembles P. Picea, but is smaller, at most 50 feet high. Eligible for our alpine country.

Pinus Alcocquiana, Parlatore.

Japan, at an elevation of 6 to 7000 feet. A fine tree, with very small blue-green leaves; the wood is used for light household furniture.

Pinus amabilis, Dougl.

Californian Silver Fir. North California, at an elevation of 4000 feet. A handsome fir, 200 feet high, circumference of stem 24 feet; the stem is naked up to 100 feet.

Pinus Australis, Michx.*

Southern or Swamp Pine, also called Georgia, Yellow Pitch or Broom Pine. In the Southern States of N. America. The tree attains a height of 70 feet. It furnishes a good timber for furniture and building. It is this tree, which forms chiefly the extensive pine barrens of the United States, and yields largely the American turpentine.

Pinus Ayacahuite, Ehrenb. (*P. Loudoniana,* Gord.)

In Mexico, at an elevation of 8000 to 12,000 feet. An excellent pine, 100 to 150 feet high, with a stem diameter of 3 to 4 feet, yielding a much esteemed white or sometimes reddish timber.

Pinus balsamea, L.

Balsam Fir, Balm of Gilead Fir. Canada, Nova Scotia, New England. An elegant tree, 40 feet high, which with Pinus Fraseri yields the Canada Balsam, the well-known oleo-resin. The timber is light, soft and useful for furniture. It thrives best in cold swampy places. Eligible for our alps.

Pinus Canadensis, L.

Hemlock Spruce. In Canada and over a great part of the United States, on high mountains. A very ornamental tree, 100 feet high, with a white cross-grained and inferior wood. The tree, however, is extremely valuable on account of its bark, which is much esteemed as a tanning material; it is stripped off during the summer months. The young shoots are used for making spruce beer.

Pinus Canariensis, C. Smith.*

Canary Pine. Canary Islands, forming large forests at an elevation of 5 to 6000 feet. A tree 70 feet high, with a resinous durable very heavy wood, not readily attacked by insects. It thrives well in Victoria, and shows celerity of growth.

Pinus Cedrus, L.

Cedar of Lebanon. Together with the Atlas variety on the mountains of Lebanon and Taurus, also in N. Africa. The tree grows to a height of 100 feet, and attains a very great age; the wood is of a light reddish color, soft, easy to work, and much esteemed for its durability.

Pinus Cedrus var. Deodara.*

Deodar Cedar. On the Himalaya mountains, 4 to 12,000 feet above sea level. A majestic tree, 150 feet high, and sometimes 30 feet in circumference of stem. The wood is of a whitish yellow color, very close-grained and resinous, and furnishes one of the best building timbers known; it must, however, not be felled too young. The tree also yields a good deal of resin and turpentine.

Pinus Cembra, L.

On the European Alps, also in Siberia and Tartary. The tree attains a height of 60 feet; the wood is of a yellow color, very soft and resinous, of an extremely fine texture and is extensively used for carving and cabinet work. The seeds are edible, and when pressed yield a great quantity of oil. A good turpentine is also obtained from this pine.

Pinus cembroides, Zucc. (*P. Laveana,* Schiede and Deppe.)

Mexican Swamp Pine. A small tree, 30 feet high, growing at an elevation of 8000 to 10,000 feet. The timber is not of much use, but the seeds are edible and have a very agreeable taste.

P. Cilicica, Ant. and Kotsch.

Cilician Silver Fir. Asia Minor. 4000 to 6500 above sea level. A handsome tree of pyramidal growth 160 feet high. The wood is very soft and used extensively for the roofs of houses, as it does not warp.

Pinus contorta, Dougl.

On high damp ranges in California, attaining 50 feet in height. It is valuable as a shelter tree in stormy localities.

Pinus Coulteri, Don.

California, on the eastern slope of the coast range at an elevation of 8000 to 4000 feet. A pine of quick growth, attaining a height of 75 feet; it has the largest cones of all pines.

Pinus Douglasii, Sabine.*

Oregon Pine. N.W. America forming very extensive forests. A large conical shaped tree, up to 300 feet in height, with a stem of 2 to 10 feet diameter. Only in a moist forest climate of rapid growth.

Pinus dumosa, Don (*P. Brunoniana Wall.*)

Bootan, Sikkim and Nepal, 10,000 feet above sea level. A very ornamental fir, rising to 70 or 80 feet.

Pinus excelsa, Wall.*

The Lofty or Bootan Pine. Himalaya, forming large forests at from 6000 to 11,500 feet elevation. A fine tree, 150 feet high, furnishing a valuable, close-grained, resinous wood, as well as a good quantity of turpentine.

Pinus Fortunei, Parlatore.

China, in the neighbourhood or Foochowfoo. A splendid tree, 70 feet high, somewhat similar in habit to P. Cedrus.

Pinus Fraseri, Pursh.

Double Balsam Fir. On high mountains of Carolina and Pennsylvania. This tree, which gets about 20 feet high, yields with P. balsamea Canada Balsam.

Pinus Gerardiana, Wall.

Nepal Nut Pine. In the N.E. parts of the Himalaya at an elevation of 10,000 to 12,000 feet, forming extensive forests. The tree gets 50 feet high, and produces very sweet edible seeds, also turpentine.

Pinus grandis, Dougl.

Great Silver Fir of North California. A splendid fir, 200 feet high and upwards, growing best in moist valleys of high ranges; the wood is white and soft.

Pinus Haleppensis, Mill.*

Aleppo Pine. South Europe and North Africa. This well known pine attains a height of 80 feet with a stem of from 4 to 5 feet in diameter. The timber of young trees is white, of older trees of a dark color; it is principally esteemed for ship building, but also used for furniture. The tree yields a kind of Venetian turpentine, as well as a valuable tar. It thrives well in waterless rocky places, also on the sandy sea coast. P. maritima is a variety of this species. Content with the poorest and driest localities, and rapid of growth.

Pinus Hartwegii, Lindl.

Mexico, 9000 to 13,000 feet above sea level. A pine, 50 feet in height, with a very durable wood of a reddish color; it yields a large quantity of resin.

Pinus Larix, L.

Common Larch; deciduous. On the European Alps up to 7000 feet. It attains a height of 100 feet, sometimes rising even up to 160 feet, and produces a valuable timber of great durability, which is used for land and water buildings, and much prized for ship building. The bark is used for tanning and dyeing. The tree is of great importance for its yield of the Venetian turpentine, which is obtained by boring holes into it in spring; these fill during the summer, supplying from ½ to ¾ pint of turpentine. In Piedmont, where they tap the tree in different places and let the liquid continually run, it is said that from 7 to 8 may be obtained in a year, but the wood suffers through this operation. P. L. var. Rossica, Russian Larch, grows principally on the Altai mountains from 2,500 to 5,500 feet above sea level; it attains a height of 80 feet. The species would be important for our upland country.

Pinus leiophylla, Schiede and Deppe.

7000 to 11,000 feet up on the mountains of Mexico. A tree 90 feet high. The wood is excessively hard.

Pinus leptolepis, Sieb. and Zucc.

Japan Larch. In Japan, between 35° and 48° N. lat., up to an elevation of 9000 feet. The timber is highly valued by the Japanese.

Pinus longifolia, Roxb.*

Emodi Pine or Cheer Pine. On the Himalaya mountains, from 2000 to 7000 feet. A handsome tree with a branchless stem of 50 feet; the wood is resinous and the red variety useful for building; it yields a quantity of tar and turpentine. The tree stands exposure and heat well.

Pinus Massoniana, Lamb. (*P. Sinensis,* Lamb.)

China and Japan. This pine attains a height of 60 feet, and supplies a resinous tough and durable wood, used for buildings and furniture. The roots, when burned with the oil of Brassica Orientalis, furnish the Chinese Lampblack.

Pinus Menziesii, Dougl.

North West America. A very handsome tree, which grows to a height of 70 feet, and furnishes a valuable timber; it thrives best in moist ground.

Pinus Hudsonica, Poir. (*P. Banksiana,* Lamb.)

Grey Pine; North America, up to 64° N. lat. Height of tree 40 feet, in the cold north only a shrub. The wood is light, tough and easily worked.

Pinus Jeffreyi, Murr.

North California, on a sterile sandy soil. A noble pine, 150 feet high; stem 4 feet thick.

Pinus Kaempferi, Lamb.

Chinese Larch; also called Golden Pine. China. This is the handsomest of all the larches. It is of quick growth, and attains a height of 150 feet. The leaves, which are of a vivid green during spring and summer, turn to a golden yellow in autumn. The wood is very hard and durable.

Pinus Koraiensis, Sieb. and Zucc.

China and Japan. A handsome tree, 30 to 40 feet high, producing edible seeds.

Pinus Lambertiana, Dougl.

Giant or Sugar Pine. North-west coast of America; mostly in great altitudes. A lofty tree, upwards of 300 feet high, with a straight, naked stem of from 20 to 60 feet in circumference. It thrives best in sandy soil, and produces a soft, white, straight grained wood, which for inside work is esteemed above any other pine in California, and furnished in large quantities. The cones are 18 inches long; the seeds are edible, and used as food by the natives. Would come best to perfection in the humid regions of our higher mountains.

Pinus Laricio, Poir.*

Corsican Pine. South Europe. It attains a height of 120 feet. The wood is white, towards the centre dark, very resinous, coarse-grained, elastic and durable, and much esteemed for building, especially for waterworks. There are three main varieties of this pine, viz.: P. L. Poiretiana, in Italy; P. L. Austriaca, in Austria; P. L. Pallassiana, on the borders of the Black Sea. The tree grows best in calcareous soil, but also in poor, sandy soil, where, however, the timber is not so large nor so good. It yields all the products of P. silvestris, but in greater quantities, being perhaps the most resinous of all pines.

Pinus Mertensiana, Bong.

Californian Hemlock Spruce. North-west America. The wood is white and very soft, but is often used for building. The tree is from 100 to 150 feet high, by a stem diameter of 4 to 6 feet.

Pinus mitis, Michx.

Yellow Pine of North America. In dry sandy soil, attaining a height of 60 feet. Wood durable, fine-grained, moderately resinous, valuable for flooring.

Pinus monophylla, Torr. and Frem.

Stone or Nut Pine of California, on the Sierra Nevada and Cascade Mountains, 6,500 feet. The seeds are edible, of an almond-like taste, and consumed in quantity by the natives. Height of tree only 35 feet; thickness of stem 8 to 10 inches.

Pinus montana, Du Roi. (*P. Pumilio Hœnke.*)

On the Alps and Carpathians up to the highest points, covering large tracts, and thriving on the poorest soil. The tree, which grows about 25 feet high, in favourable localities 50, yields much oil of turpentine. The wood is used for carving and for firewood. Only available to advantage for our highlands.

Pinus Montezumae, Lamb. (*P. Devoniana*, Lindl.) (*P. Grenvillæ*, Gord.)

Mexico. A handsome Pine, 80 feet high; wood white, soft and resinous.

Pinus monticola, Dougl.

California, at an elevation of 7,000 feet. It thrives best in poor soil of granite formation, and attains the height of 200 feet, with a stem of 1½ to 4 feet thick. The wood is white, close-grained.

Pinus muricata, Don.

Bishop's Pine. California. Found up 7,500 feet. This pine grows to about 40 feet.

Pinus nigra, Ait.

Black Spruce. North-East America. Occurring extensively between 44° and 53° N. latitude. This tree, which is termed Double Spruce by the Canadians, attains a height of 70 feet, and furnishes a light elastic timber of white colour, excellent for yards of ships. The young shoots are used for making spruce-beer, and the small roots serve as cords. It likes swampy forest land.

Pinus nobilis, Dougl.

Noble White Fir. North west coast of America, on the Columbia River and the mountains of North California, where it forms extensive forests at 6 to 8,000 feet. A majestic tree, 150 to 200 feet high, with regular horizontal branches. It furnishes a valuable timber for building.

Pinus orientalis, L.

Sapindus Fir. In Asia Minor, at 4,000 feet. The tree rises to about 80 feet, and resembles somewhat the Norway Spruce. The wood is exceedingly tough and durable.

Pinus parviflora, Sieb.

In Japan. It only gets about 25 feet high; but is much used as an avenue tree; wood for fine furniture and boat-building.

Pinus Pattoniana, Parl.

California; 5 to 6,000 feet above sea-level. A very fine fir, 300 feet high, with a perfectly straight stem. The wood is hard, of a reddish colour, with handsome veins; but poor in resin.

Pinus patula, Schiede and Deppe.

In Mexico; at an elevation of 8 to 9,000 feet. A graceful pine, 80 feet high.

Pinus pendula, Soland. (*P. microcarpa*, Lamb.)

Small-coned American Larch; Black Larch or Tamarack. Frequent in Vermont and New Hampshire. A pine of pyramidal growth, 100 feet high. The timber is white, heavy, resinous, and as highly valued as that of the Common Larch.

Pinus picea, Du Roi.* (*P. Abies*, L.)

Norway Spruce, Fichte. Middle and Northern Europe and Northern Asia; rising from the plains to an elevation of 4,500 feet, and forming extensive forests. The tree attains a height of 150 feet or even more, and furnishes an excellent timber for building and furniture; commonly known under the name of White Deal. It also produces the Burgundy Pitch in quantity, while the bark is used for tanning. Though enduring our dry summers, this spruce would have to be restricted for timber purposes to the damp mountains.

Pinus Pinaster, Soland.*

Cluster Pine. On the shores of the Mediterranean. The tree is of quick growth, and rises to 60 feet in height; the wood is soft and resinous; it yields largely the French turpentine. Among the best pines for consolidation of sandy coast land, and converting rolling sands into pasture and agricultural land. For ease of rearing and rapidity of growth, one of the most important of all pines.

Pinus Pinceana, Gord.

Mexico, up to 9000 feet above sea level. A very remarkable pine, having drooping branches like the Weeping Willow; 60 feet high. Most desirable for cemeteries.

Pinus Pindrow, Royle.

In great abundance on the spurs of the Himalaya mountains, 8 to 12,000 feet above the sea level. A fine straight stemmed tree, 100 feet high.

Pinus Pinea, L.*

Stone Pine. Frequent in the countries bordering on the Mediterranean; height of tree 60 feet; the wood is whitish, light, but full of resin, and much used for buildings, furniture and ships. The seeds are edible, somewhat resembling almonds, but of a taste resinous though not disagreeable; they only ripen in their third year. This pine grows as easily and almost as quickly as the Cluster Pine.

Pinus Pinsapo, Boiss.

Spanish Fir. In Spain, on the Sierra Nevada, 4 to 6000 feet. A tree of 60 feet high, with branches from the ground.

Pinus ponderosa, Dougl.* (*P. Benthamiana,* Hartw.)

Yellow or Pitch Pine of the mountains of N.W. America. Height of tree up to 225 feet, with a stem of 24 feet in circumference, of comparatively quick growth; the wood is heavy, and for general purposes preferred to that of any other pine. Has proved well adapted even for dry localities in Victoria.

Pinus Pseudo-Strobus, Lindl.*

In Mexico. This tree is superior in appearance to any other Mexican pine; height 80 feet.

Pinus Pyrenaica, Lapeyr.

In the South of Spain and on the Pyrenees. A fine ornamental tree of quick growth, 80 feet high; the wood is white and dry, poor in resin.

Pinus radiata, Don.* (*P. insignis,* Dougl.)

California. A splendid pine, fully 100 feet high, with a straight stem 2 to 4 feet in diameter. It is of remarkably rapid growth, a seedling, one year old, being strong enough for final transplantation; the wood is tough, and much sought for boat-building and various utensils.

Pinus religiosa, Humb.

Oyamel Fir. Mexico, 4 to 9000 feet above the sea level. A magnificent tree with silvery leaves, growing 100 feet high; stem 6 feet in diameter; the wood is particularly well fit for shingles.

Pinus resinosa, Soland.

Red Pine. N. America, principally in Canada and Nova Scotia. It gets 80 feet high and 2 feet in diameter; the wood is red, fine-grained, heavy and durable, not very resinous, and is used for ship-building.

Pinus rigida, Mill.*

American Pitch Pine. From New England to Virginia. It grows to a height of 80 feet; the timber, when from good soil, is hard and resinous and used for building; but the tree is principally important for its yield of turpentine, resin, pitch and tar.

Pinus rubra, Lamb.

Hudson's Pine, Red Spruce. Nova Scotia, Newfoundland and other northern parts of the American Continent. A straight slender tree, 70 feet high; the wood is of a reddish color and highly esteemed

Pinus Sabiniana, Dougl.*

Californian Nut Pine or White Pine. Most frequent on the western slopes of the Rocky Mountains, intermixed with other trees; 150 feet high; stem 3 to 5 feet in diameter; the wood is white and soft; the clustered heavy cones attain a length of 1 foot; the seeds are edible. Proves in dry localities of Victoria to be of quick growth.

Pinus serotina, Michx.

Pond Pine. Southern States of North America, in black morassy soil, principally near the sea coast; it is 50 feet high, stem 18 inches in diameter; the wood is soft.

Pinus silvestris, L.*

Scotch Fir, Foehre. Middle and Northern Europe, up to 70° N. Lat., and North Asia, thriving best in sandy soil. A very valuable tree, fully 100 feet high, growing to the age of about 120 years. The Red Baltic, Norway, or Riga deals are obtained from this pine, as well as a large portion of the European pine tar. Proves well adapted even for the drier parts of Victoria.

Pinus Sibirica, Turcz. (*P. Pichta,* Fisch.)

Siberian Pitch Fir. On the Altai Mountains; it reaches a height of 50 feet.

Pinus Strobus, L.*

Weymouth Pine or American White Pine. N.E. America, growing on any soil, but preferring swampy ground; it is found 160 feet high, with a stem of 4 to 6 feet in diameter; the wood is soft, white, light, free of knots, almost without resin, easy to work, and much esteemed for masts; it yields American turpentine and gallipot.

Pinus Tæda, L.

Frankincense or Loblolly Pine. Florida and Virginia, in sandy soil, attaining a height of 80 feet; the timber is esteemed for ship-building. It also yields turpentine in good quantity, though of inferior quality.

Pinus tenuifolia, Benth.

Mexico, at an elevation of 5000 feet, forming dense forests; height of tree 100 feet, stem up to 5 feet in diameter.

Pinus Teocote, Cham. and Schlecht.

Okote or Torch Pine. Mexico, 5 to 8000 feet above the sea level. Tree 100 feet high, stem 3 to 4 feet in diameter; the wood is resinous and durable.

Pinus Tsuga, Ant.

In the northern provinces of Japan, 6 to 9000 feet above the sea. The tree gets only 25 feet high; its timber is highly esteemed for superior furniture, especially by turners.

Pinus Webbiana, Wallich.*

King Pine, Dye Pine. On the Himalaya Mountains, at an elevation of 12 to 13,000 feet. A splendid fir 70 to 80 feet high, with a stem diameter of generally 3 to 4 feet, but sometimes even 10 feet. The wood is of a white color, soft, coarse-grained and very resinous; the natives extract a splendid violet dye from the cones.

Sciadopitys verticillata, Sieb.

The lofty and curious Umbrella Fir of Japan, 140 feet high; resists severe frosts; wood white and compact.

Sequoia sempervirens, Endl.* (*Taxodium sempervirens,* Lamb.)

Red Wood or Bastard Cedar of N. W. America, chiefly California. A splendid tree, 300 feet high, occasionally with a diameter of the stem of 55 feet. The wood is reddish, close-veined, but light and brittle. One of the most colossal trees of the globe.

Sequoia Wellingtonia, Seem.* (*Wellingtonia gigantea*, Lindl.)

Mammoth Tree. California, up to 5000 feet above the sea. This, the biggest of all trees, attains a stem of 320 feet in length and 112 feet in circumference, the oldest trees being estimated at 1100 years; the total height of a tree will occasionally be 450 feet; a stem broken at 300 feet had yet a diameter of 18 feet. The wood is soft and white when felled, afterwards it turns red.

Taxodium distichum, Rich.*

Virginian Swamp or Bald Cypress. In swampy places of North America. A large and valuable tree, 100 feet high, with a stem circumference of sometimes 40 feet, of rapid growth, with deciduous foliage like that of the Larch and Ginkgo; it is found fossil in the miocene formation of many parts of Europe. The wood is fine-grained, hard and durable; it yields an essential oil and a superior kind of turpentine. Useful for avenues on swampy margins of lakes or river banks.

Taxodium mucronatum, Ten.

The famed Montezuma Cypress of Mexico, 120 feet high, with a trunk 44 feet in circumference; it forms extensive forests between Chapultepec and Tescuco.

Taxus baccata, L.

Yew. Middle and South Europe and Asia, at 1000 to 4000 feet elevation. Generally a shrub, sometimes a tree 40 feet high, which furnishes a yellow or brown wood, exceedingly tough, elastic and durable, and much esteemed by turners. The tree is of very slow growth, and reaches a great age, perhaps several thousand years; some ancient ones are known with a stem of fifty feet in girth.

Taxus brevifolia, Nuttall. (*T. Lindleyana*, Laws.)

N. W. America. Western Yew. A stately tree, 75 feet high, with a stem of 5 feet in circumference. The Indians use the wood for their bows.

Thuya gigantea, Nutt.

N. W. America, on the banks of the Columbia River. The Yellow Cypress of the colonists. A straight, graceful tree, 200 feet high, furnishing a valuable building timber of a pale or light yellow color.

Thuya occidentalis, L.

N. America, particularly frequent in Canada. A fine tree, 70 feet high; the wood is reddish or yellowish, fine-grained, very tough and resinous, and well fit for building, especially for water work. The shoots and also an essential oil of this tree are used in medicine; the bast can be converted into ropes.

Thuyopsis dolabrata, Sieb and Zucc.

Japan. A majestic tree, furnishing an excellent hard timber of a red color.

Torreya Californica, Torr. (*T. myristica*, Hooker.)

In California. Tree 80 feet high.

Torreya grandis, Fortune.

China. A tree 60 feet high, with an umbrella-shaped crown; it produces good timber.

Torreya nucifera, S. and Z. (*Caryotaxus nucifera*, Zucc.)

Japan. Height of tree about 30 feet. From the nuts the Japanese press an oil, used as an article of food.

Torreya taxifolia, Arnott.

Florida. A tree 50 feet in height, with a firm, close-grained, durable wood of a reddish color.

Widdringtonia juniperoides, Endl.

South Africa, 3000 to 4000 feet above sea level. A middling sized tree, rich in resin.

II.—MISCELLANEOUS TREES, NOT CONIFEROUS.

Acacia acuminata, Benth.

A kind of Myall from Western Australia, attaining a height of 40 feet.

Acacia decurrens, Willd. (*A. mollissima*, Willd. *A. dealbata*, Link.)

The Black Wattle or Silver Wattle. From the eastern part of S. Australia, through Victoria and N. S. Wales, to the southern part of Queensland, in open plains a small or middle sized tree, in deep forest recesses a lofty tree, of singularly rapid growth. Its wood can be used for staves and many other purposes, but its chief use would be to afford the first shelter, in treeless localities, for raising forests. Its bark, rich in tannin, and its gum, not dissimilar to Gum Arabic, render this tree also important. Other quick growing trees, useful in various ways, growing in any soil and enduring drought, can be used simultaneously, by mere dissemination, in ploughed ground, for dense temporary belts of shelter, or for quick yielding fuel plantations, such as *Acacia pycnantha, A. lophantha, Casuarina quadrivalvis, Casuarina suberosa, Eucalyptus melliodora, Eucalyptus viminalis* and many other Eucalypts, all easily growing from seed.

Acacia homalophylla, Cunn.

The Victorian Myall, extending into the deserts of N.S. Wales. The dark brown wood is much sought for turner's work on account of its solidity and fragrance; perhaps its most extensive use is in the manufacture of tobacco pipes. Never a tall tree.

Acacia Melanoxylon, R. Br.

The well known Blackwood of our river flats and moist forest valleys, passing also under the inappropriate name of Lightwood. In irrigated valleys of deep soil the tree will attain a height of 80 feet, with a stem several feet in diameter. The wood is most valuable for furniture, railway carriages, boat-building, casks, billiard tables, pianofortes (for sound-boards and actions), and numerous other purposes. The fine-grained wood is cut into veneers. It takes a fine polish, and is considered equal to the best Walnut. Our best wood for bending under steam. For further details refer to the volumes of the Exhibitions of 1862 and 1867.

Acer campestre, L.

Extends from Middle Europe to North Asia. Height 40 feet, in shelter and deep soil; the yellow and purple tint of its foliage in autumn render the tree then particularly beautiful. The wood is compact and fine-grained, and sought for choice furniture. The tree can be trimmed for hedge growth. Comparatively quick of growth, and easily raised from seed. These remarks apply to almost all kinds of Maples.

Acer dasycarpum, Ehrhart.

The Silver Maple of North America. Likes rather a warmer climate than the other American Maples, and therefore particularly desirable for us here. Height 50 feet; wood pale and soft, stem sometimes 9 feet in diameter.

Acer macrophyllum, Pursh.

Large Oregon Maple. Tree 90 feet high, of quick growth; stem 16 feet in circumference; wood whitish, beautifully veined.

Acer Negundo, L.

The Box Elder of North America. A tree, deciduous like the rest of the Maples; attains a height of about 50 feet, and is rich in saccharine sap. Proved well adapted for our country.

Acer palmatum, Thunb.

This beautiful tree with deeply cleft leaves is indigenous to Japan, where various varieties with red and yellow tinged leaves occur. Should it be an aim to bring together all the kinds of Maples, which could be easily grown in appropriate spots of Victoria, then Japan alone would furnish 25 species.

Acer platanoides, L.

The Norway Maple, extending south to Switzerland, 70 feet high. The pale wood much used by cabinetmakers.

Acer Pseudo-platanus, L.

The Sycamore Maple or British Plane. Attains a height of over 100 feet. The wood is compact and firm, valuable for various implements, instruments and cabinet work. It furnishes like some other maples a superior charcoal.

Acer rubrum, L.

The Red Maple, North America. A tree attaining 80 feet, fond of swampy places; wood close-grained. The trunk when twisted furnishes also curled maple wood. Grows well with several other maples, even in dry open localities of this part of Australia, although the foliage may somewhat suffer from our hot winds.

Acer saccharinum, Wang.*

One of the largest of the maples. In the colder latitudes of North America, 80 feet high. Wood of rosy tinge, when knotty or curly furnishes the Birdseye and curly Maplewood. In the depth of winter the trees, when tapped, will yield the saccharine fluid, which is so extensively converted into maple sugar, each tree yielding 2 to 4 lb. a year. The trees can be tapped for very many years in succession, without injury. The Sugar Maple is rich in potash. Numerous other maples exist, among which as the tallest may be mentioned, *Acer Creticum*, L., of South Europe, 40 feet; *A. lævigatum*, *A. sterculiaceum* and *A. villosam*, Wallich, of Nepal, 50 feet; *A. pictum*, Thunb., of Japan, 30 feet.

Æsculus Hippocastanum, L.

Indigenous to Central Asia. One of the most showy of deciduous trees, more particularly when during spring "it has reached the meridian of its glory, and stands forth in all the gorgeousness of leaves and blossoms." Height 60 feet. It will succeed in sandy soil on sheltered spots; the wood adapted for furniture; the seeds a food for various domestic animals; the bark a good tanning material. Three species occur in Japan, and several, but none of great height, in North America and South Asia.

Ailantus glandulosa, L.

S.E. Asia. A hardy deciduous tree, 60 feet high, of rather rapid growth, and of very imposing aspect in any landscape. Particularly valuable on account of its leaves, which afford food to a silkworm (*Bombyx Cynthia*), peculiar to this tree; wood pale yellow, of silky lustre when planed, and therefore valued for joiners' work. In South Europe planted for avenues.

Alnus glutinosa, Gaertn.

The ordinary Alder. Throughout Europe and extra tropical Asia, 70 feet high; well adapted for river banks; wood soft and light, turning red, furnishing one of the best charcoals for gunpowder; it is also durable under water, and adapted for turners and joiner's work. *A. incana* Willd. is an equally high and allied species.

Amyris terebinthifolia, Tenore.

Brazil. Is here perfectly hardy, and is content in dry ground without any irrigation. It proved one of the best among the smaller avenue trees, is beautifully spreading and umbrageous, and probably of medicinal value.

Angophora intermedia, Cand.

South East Australia. This is the best of the Angophoras, attaining a height of 50 feet, and growing with the rapidity of an Eucalyptus, but being more close and shady in its foliage. It would be one of our best trees to line public roads, and to effect shelter plantations.

Baloghia lucida, Endl. (*Codiæum lucidum*, J. M.)

East Australia. A middle sized tree. The sap from the vulnerated trunk forms, without any admixture, a beautiful red indelible pigment.

Betula alba, L.*

The ordinary Birch of Europe and extratropical Asia. It attains a height of 80 feet, and would here thrive best in moist glens of the ranges, or in the higher regions of our mountains, where it would form up at the Alpine Zone excellent shelter plantations. The durable bark serves for roofing. Wood white, turning red. The oil of the bark is used in preparing the Russian leather.

Betula nigra, L.

The Black or River Birch of North America. One of the tallest of Birches. If grown on the banks of a limpid stream, it will bear intense heat. The wood is compact, of a light colour.

Betula papyracea, Ait.

The Paper Birch of North America. A larger tree than *B. alba*, with a fine-grained wood and a tough bark; much used for portable canoes. It likes a cold situation.

Betula lenta, Willd.

The Cherry Birch of North America. A tree of middle size, liking moist ground. Bark aromatic. Wood rose-coloured or dark, fine-grained, excellent for furniture. Several Birches occur in Japan, which might well be tried here.

Carpinus Betulus, L.

The Hornbeam. A tree of 80 feet high. Middle and South Europe. Wood pale, of a horny toughness and hardness, close-grained, but not elastic. This tree would serve to arrest the progress of bushfires, if planted in copses or hedges like willows and poplars around forest plantations. A smaller species, Carpinus Americana, Mich., yields the Ironwood of North America. Four species occur in Japan (*C. cordata, C. erosa, C. laxiflora, C. japonica* (Blume). *Carpinus viminea* (Wallich) is a species with durable wood from the middle regions of Nepal.

Carya alba, Nuttall.*

The Shellbark-Hickory. A deciduous tree, 90 feet high, which delights in rich forest soil; a native of North America. Wood strong, elastic, and tenacious, but not very durable. Yields the main supply of Hickory nuts. All the hickories are extensively used in North America for hoops.

Carya amara, Nuttall.

The Bitternut Tree or Swamp Hickory. A tree, 80 feet high, in swampy grounds of North America. Wood less valuable than that of other Hickories.

Carya glabra, Torrey.* (*Carya porcina*, Nuttall.)

The Hognut Tree. A tree, 80 feet high, in forest land of North America. Wood very tough; the heart-wood reddish or dark-coloured; much used for axletrees and axehandles.

Carya oliviformis, Nuttall.*

The Pecan Nut Tree. A lofty tree, fond of river banks in North America.

Carya sulcata, Nuttall.*

The Furrowed Hickory and Shellbark Hickory of some districts; also Shagbark Hickory. A tree, 80 feet high, in damp woods of North America. Heart-wood pale-coloured. Seed of sweet pleasant taste.

Carya tomentosa, Nuttall.*

The Mocker Nuttree or White Heart Hickory. A big tree of North America. Likes forest soil, not moist. Heart-wood pale-coloured, remarkable for strength and durability. Seeds very oily. Nut small, but sweet. A variety produces nuts as large as an apple.

Castanea sativa, Miller.* (*C. vesca Gœrtner.*)

The Sweet Chesnut Tree. South Europe and temperate Asia, as far as Japan, and a variety with smaller fruits extending to North America. It attains an enormous age; at Mount Etna an individual tree occurs with a stem 204 feet in circumference. The wood is light and coarse-grained; the importance of the tree rests on its adaptability for shade plantations, its nutritious nuts and timber value.

Castanopsis argentea, A. Candolle.

A lofty tree in the mountains of India, produces also edible chesnuts. Other species of the genus Castanopsis are valuable.

Casuarina glauca, Sieber.

The Desert Sheoak, widely distributed through Australia, but nowhere in forest-like masses. This species attains, in favourable places, a height of 80 feet. Its hard durable wood is valuable. Important for its rapid growth, resistance to exposure for shelter plantation, and a speedy supply of fuel, a remark which applies also to the following species.

Casuarina quadrivalvis, Labillard.

The Coast Sheoak of South-east Australia, but not merely living in coast sand, but also on barren places up to the hills inland. Height to 60 feet. The male tree is very eligible for avenues, the foliage of the species being drooping. Cattle are fond of the foliage. For arresting the ingress of coast sand by belts of timber, this is one of the most important trees. It produces, like other Casuarinas, seeds early and copiously, and is easily raised.

Casuarina suberosa, Willd.

The Erect Sheoak of South East Australia. Height to 40 feet. A beautiful shady species. *Casuarina trichodon* (Miq.), *C. Fraseriana*, (Miq.), and *C. Huegeliana* (Miq.), are arboreous species of South-west Australia, all valuable for their wood.

Cedrela Taona, Roxburgh.*

The Singapore Cedar. A mere variety of this is the Red Cedar of East Australia (*Cedrela Australis*, Cunn.) The light beautiful wood, easily worked and susceptible of high polish, is much in request for

furniture, for the manufacture of pianofortes, for boat-building and a variety of other work. As this important tree is largely extirpated in the cedar brushes, it is highly desirable to form of it in our rich forest gullies independent plantations for future local supply. The Red Cedar is hardy at Melbourne, but in our open exposed gardens and poor soil of slow growth.

Celtis Australis, L.

The Lotus tree of South Europe and North Africa. Of longevity, 50 feet high, available for avenues. Berries edible. Wood hard and dense, eligible particularly for turners and carvers' work.

Celtis Occidentalis, L.

The Huckberry Tree. A fine forest tree in Ohio, and other parts of North America. Height, 80 feet. The variety called *C. crassifolia* is the best. The sweet fruits edible. Wood elastic and fissile.

Ceratonia Siliqua, L.

The Carob tree of the Mediterranean regions. It attains a height of 30 feet and resists drought well. Wood pale red. The saccharine pods, Algaroba or St. John's Bread, of value for domestic animals. The seeds germinate readily.

Cinnamomum Camphora, Nees.*

The Camphor tree of China and Japan, attaining a height of about 40 feet. It endures the occasional frosts of Port Phillip, though the foliage will suffer. The wood, like all other parts of the tree, is pervaded by Camphor, hence resists the attack of insects.

Corylus Colurna, L.

The Constantinople Nut tree, the tallest of Hazels, attaining 60 feet in height, of rather quick growth. This, as well as the European Hazel (*Corylus Avellana*, L.) and the Japan Hazel (*C. heterophylla*, *Fischer*) might be grown for copses in our forest gullies.

Corynocarpus laevigata, Forst.

The Karaka of New Zealand and the principal forest tree of the Chatham Islands, attaining the height of 60 feet. The wood is light, and used by the natives for canoes. The pulp of the fruit is edible. Cattle browse on the foliage. In rich humid soil the tree can be adopted for avenues.

Diospyros Virginiana, L.

The N. American Ebony or Parsimon. A tree 60 feet high. Wood very hard and blackish. The sweet variety yields a good table fruit.

Engelhardtia spicata, Blume.

The spurious Walnut tree of the mountains of Java and the Himalayas. It reaches a height of 200 feet.

Eucalyptus amygdalina, Labill.

In our sheltered springy forest glens attaining not rarely a height of over 400 feet, there forming a smooth stem and broad leaves, producing also seedlings of a foliage different to the ordinary state of *Euc. amygdalina*, as occurs in more open country. This species or variety, which might be called *Eucalyptus regnans*, represents the loftiest tree in British territory, and ranks next to the *Sequoia Wellingtonia* in size anywhere on the globe. The wood is fissile, well adapted for shingles, rails, for housebuilding, for the keelson and planking of ships and other purposes. Labillardière's name applies ill to any of the forms of this species. Seedlings raised on rather barren ground near Melbourne have shown the same amazing rapidity of growth as those of *Euc. globulus*; yet, like those of *Euc. obliqua*, they are not so easily satisfied with any soil.

Eucalyptus citriodora, Hooker.

Queensland. It combines with the ordinary qualities of many Eucalypts the advantage of yielding from its leaves a rather large supply of volatile oil of excellent lemon-like fragrance.

Eucalyptus diversicolor, F. v. Mueller.

The Karri of S. W. Australia. A colossal tree, exceptionally reaching to the height of 400 feet, with a proportionate girth of the stem. The timber is excellent. Fair progress of growth is shown by the young trees, planted even in dry exposed localities in Melbourne. The shady foliage and dense growth of the tree promise to render it one of our best for avenues. In its native localities it occupies fertile, rather humid valleys.

Eucalyptus globulus, Labill.

Blue Gumtree of Victoria and Tasmania. This tree is of extremely rapid growth and attains a height of 400 feet, furnishing a first-class wood; shipbuilders get keels of this timber 120 feet long; besides this they use it extensively for planking and many other parts of the ship, and it is considered to be generally superior to American Rock Elm. A test of strength has been made between some Blue Gum, English Oak, and Indian Teak. The Blue Gum carried 14 lbs. weight more than the Oak and 17 lbs. 4ozs. more than Teak upon the square inch. Blue Gum wood, besides for shipbuilding, is very extensively used by carpenters for all kinds of out-door work, also for fence rails, railway sleepers—lasting about 9 years,—for shafts and spokes of drays, and a variety of other purposes.

Eucalyptus gomphocephala, Candolle.

The Tooart of S. W. Australia; attains a height of 50 feet. The wood is close-grained, hard and not rending. It is used for shipbuilding, wheelwright's work and other purposes of artisans.

Eucalyptus marginata, Smith.*

The Jarrah or Mahogany tree of S. W. Australia, famed for its indestructible wood, which is attacked neither by Chelura nor Teredo nor Termites, and therefore so much sought for jetties and other structures exposed to sea-water, also for any underground work, and largely exported for railway sleepers. Vessels built of this timber have been enabled to do away with all copperplating. It is very strong, of a close grain and a slightly oily and resinous nature; it works well, makes a fine finish, and is by shipbuilders here considered superior to either Oak, Teak, or indeed any other wood. The tree grows chiefly on ironstone ranges. At Melbourne it is not quick of growth, if compared to our Blue Gum (*Euc. globulus*, Lab.) or to our Stringybark (*E. obliqua*, l'Her.), but it is likely to grow with celerity in our ranges.

Eucalyptus rostrata, Schlechtendal.

The Red Gum of Victoria, South Australia and many river flats in the interior of the Australian continent. Although a native tree of this colony, it has been introduced into this list on account of its wood being of extraordinary endurance under ground, and for this reason so highly valued for fence-posts, piles and railway sleepers; for the latter purpose it will last at least a dozen years, and, if well selected, much longer. It is also extensively used by shipbuilders—for main stem, stern post, inner post, dead wood, floor timbers, futtocks, transomes, knight head, hawsepieces, cant, stern, quarter and fashion timber, bottom planks, breasthooks and riders, windlass, bowrails, &c. It should be steamed before it is worked for planking. Next to the Jarrah from West Australia this is the best wood for resisting the attacks of seaworms and white ants. For other details of the uses of this and other native trees refer to the Reports of the Victorian Exhibitions of 1862 and

1867. The tree attains a height of fully 100 feet. The supply for our local wants falls already short, and cannot be obtained from Tasmania, where the tree does not naturally exist.

Eucalyptus Sideroxylon, Cunn.

Iron Bark tree. It attains a height of 100 feet, and supplies a valuable timber, possessing great strength and hardness; it is much prized for its durability by carpenters, ship-builders, &c. It is largely employed by waggon-builders for wheels, poles, &c.; by ship-builders for top sides, tree nails, the rudder (stock), belaying pins and other purposes; it is also used by turners for rough work. This is considered the strongest wood in our colony. It is much recommended for railway sleepers, and extensively used in underground mining work.

Excoecaria sebifera, J. M. (*Stillingia sebifera*, Mich.)

The tallow tree of China and Japan. The fatty coating of the seeds yield the vegetable tallow. The wood is so hard and dense as to be used for printing blocks; the leaves furnish a black dye. The tree endures the night frosts of our open lowlands, though its foliage suffers.

Fagus Cunninghami, Hooker.

The Victorian and Tasmanian Beech. A magnificent evergreen tree, attaining colossal dimensions, and only living in cool damp rich forest valleys, not rarely 200 feet high. The wood much used by carpenters and other artisans', the myrtlewood of the trade. It requires to be ascertained by actual tests in the forests, whether the allied tall evergreen New Zealand Beeches possess any advantage over ours for forest culture, they are: *Fagus Menziesii*, Hooker, the Red Birch of the colonists; *Fagus fusca*, Hook., the Black Birch; *Fagus Solandri*, Hook. the White Birch. A magnificent beech, *Fagus Moorei*, F. von Muell. occurs in New England.

Fagus silvatica, L.

The deciduous beech of Britain, of most other parts of Europe and extra tropical Asia, and as *Fagus ferruginea*, Ait. in a particular variety, extending through North America. The trunk has been measured in height 118 feet, the head 350 feet in diameter; the wood is hard, extensively used by joiners and ship-builders. An allied Beech, *Fagus Sieboldii*, Endl., occurs in Japan. All these could here be grown to advantage only in our springy mountain forests.

Ficus Sycamorus, L.

The Sycomore Fig tree of the Orient, copiously planted along the road sides of Egypt. The shady crown extends to a width of 120 feet. Though introduced, we have as yet no local means of raising this tree in quantity, and must therefore rely on fresh importations of cuttings or more particularly seeds.

Ficus macrophylla, Desfont.

The Moreton Bay Fig-tree, which is indigenous through a great part of East Australia. Perhaps the grandest of our avenue trees, and among the very best to be planted, although in poor dry soil its growth is slow. In our latitudes it is quite hardy in the lowland. The foliage may occasionally be injured by grasshoppers. Easily raised from seed.

Fraxinus Americana, L.*

The White Ash of North America. A large tree, 80 feet high, which delights in humid forests. Timber valuable, better resisting extreme heat than the common Ash. The Red Ash (*Fraxinus pubescens*, Lam.), the Green Ash (*F. viridis*, Michx.), the Black Ash (*F. sambucifolia*, Lam.), and the Carolina Ash (*F. platycarpa*, Michx.), are of smaller size.

Fraxinus excelsior, L.*

The ordinary Ash of Europe and West Asia. Height 80 feet, of comparatively quick growth, known to attain an age of nearly 200 years. Rich soil on forest rivulets or riverbanks suit it best; wood remarkably tough and elastic, used for agricultural and other implements, for oars, axletrees and many other purposes. Six peculiar kinds of ash trees occur in Japan, some also in the Indian Highlands; all might be tried here.

Fraxinus floribunda, Don.

Nepal Ash, 40 feet high.

Fraxinus Ornus, L.*

The Manna Ash of the Mediterranean regions. Height about 30 feet. It yields the medicinal manna.

Fraxinus quadrangulata, Michx.*

The Blue Ash of North America. One of the tallest of the Ashes, 70 feet high, with an excellent timber.

Fraxinus viridis, Mich.

The Green Ash of North America. Height 70 feet; wood excellent.

Gleditschia triacanthos, L.

The deciduous Honey Locust tree of North America. Height up to 80 feet. Wood hard, coarse-grained, fissile. Sown closely, this plant forms impenetrable, thorny, not readily combustible hedges. An allied species the *G. horrida,* Willd. in East Asia. The Water Locust tree of North America (*Gleditschia monosperma,* Walt.), will grow in swamps to 80 feet.

Grevillea robusta, Cunningh.*

Our beautiful Lawntree, indigenous to the subtropical part of East Australia, 100 feet high, of rather rapid growth, and resisting drought in a remarkable degree; hence one of the most eligible trees for desert-culture. Our cultivated trees yield now already an ample supply of seeds. The wood is valued particularly for staves of casks.

Guevina Avellana, Molina (*Quadria heterophylla,* R. & P.)

The evergreen Hazel tree of Chili, growing as far as 30° S. It attains a height of 30 feet, and yields the Hazel nuts of S. America

Gymnocladus Canadensis, Lamark.

The Chirot. A North American timber and avenue tree, attaining a height of 80 feet; allied to Gleditschia, but, as the name implies, thornless. The wood is strong, tough, compact, fine-grained, and assumes a rosy color.

Juglans cinerea, L.*

The Butternut tree of N. America. About 50 feet high; stem-diameter 4 feet. Likes rocky places in rich forests. Wood lighter than that of the Black Walnut, durable and free from attacks of insects.

Juglans nigra, L.*

Black Walnut tree. Attains a height of 70 feet; trunk 4 feet in diameter; found in rich forest land in N. America. Wood purplish brown, turning dark with age, strong, tough, not liable to warp or to split; not attacked by insects. Seed more oily than the European Walnut.

Juglans regia, L.*

The ordinary Walnut tree of Europe, but of Central Asiatic origin; it attains a height of fully 80 feet, and lives many centuries. Wood light and tough, much sought for gunstocks, furniture and other things. The shells of the nut yield black pigment. Trees of choice quality of

wood have been sold for £600, the wood being the most valuable of middle Europe. Can be grown in cold localities, as it lives at 2000 feet elevation in middle Europe. The Californian Walnut tree (*Juglans rupestris*, Engelmann) and the Chinese Walnut tree (*Juglans Mandchurica*, Maxim.) ought to be introduced here.

Leucadendron argenteum, Brown.

The Silver tree of South Africa is included on this occasion among forest trees, because it would add to the splendour of our woods, and thrive far better there than in our gardens. Moreover, with this tree many others equally glorious might be established in our mild forest glens as a source of horticultural wealth, were it only to obtain in future years a copious supply of seeds. Mention may be made of the tall Magnolia trees of N. America (*Magnolia grandiflora*, L., 100 feet high; *M. umbrella*, Lam., 40 feet; *M. acuminata*, L., 80 feet; *M. cordata*, Michx. 50 feet; *M. Fraseri*, Walt., 40 feet; *M. macrophylla*, Michx., 40 feet), *M. Yulan*, Desf. of China, 50 feet; *Magnolia Campbelli*, Hook., of the Himalayas, 150 feet high and flowers nearly a foot across; *M. sphaerocarpa*, Roxb., also of the Indian Highlands, 40 feet; the North American Tulip tree (*Liriodendron tulipifera*, L.), 140 feet high, stem 9 feet in diameter; the Mediterranean Styrax tree (*Styrax officinalis*, L.); *Stenocarpus sinuosus*, Endl., of East Australia (the most brilliant of the *Proteaceæ*); the crimson and scarlet Ratas of New Zealand (*Metrosideros florida*, Sm.; *M. lucida*, Menz.; *M. robusta*, Cunn., 80 feet high; *M. tomentosa*, Cunn., 40 feet); *Fuchsia excorticata*, L., also from New Zealand, stem 2 feet in diameter; the crimson-flowered *Eucalyptus ficifolia* of West Australia; *Rhododendon Falconeri*, Hooker, from Upper India, 50 feet high, leaves 18 inches long. In the Sassafras gullies, here alluded to, also may be planted the great *Melaleuca Leucadendron*, L., the true Asiatic Cajuput tree, which grows to a height of 100 feet; even the North European Holly (*Ilex Aquifolium*), which occasionally rises to 60 feet, though both from regions so distant.

Liquidambar Altingia, Blume.

At the Red Sea and in the mountains of India and New Guinea, at 3000 feet, and probably hardy in the warmer parts of our colony. The tree attains a height of 200 feet. It yields the fragrant balsam known as liquid Storax.

Liquidambar styraciflua, L.

The Sweet-Gum tree. In morasses and on the springs of the forests of N. America, with a wide geographic range. The tree attains vast dimensions of its crown; the stem 10 feet in diameter. The terebinthine juice hardens, on exposure, to a resin of benzoin odour. Wood fine-grained.

Macadamia ternifolia, F. von Muell. - (*Helicia ternifolia*, F. M.)

The Nut tree of subtropic East Australia, attaining a height of 60 feet; hardy, as far south as Melbourne; in our forest valleys likely of fair celerity of growth. The nuts have the taste of hazels.

Morus rubra, L.

The Red Mulberry tree of North America is the largest of the genus, attaining a height of 70 feet; it produces a strong and compact timber. The White Mulberry tree (*Morus alba*, L.), with others, offering food to the silkworms, should be planted copiously everywhere for hedges or copses.

Maclura aurantiaca, Nuttall.

The Osage Orange of North America. Greatest height 60 feet; wood bright yellow, very elastic, fine-grained. For deciduous thornhedges the plant is important; its value for silkworms needs further to be tested.

Ostrya carpinifolia, Scopoli.

South Europe and Orient. The Hop Hornbean. A deciduous tree, 60 feet high.

Ostrya Virginica, Willdenow.

Leverwood tree of North America, 40 feet high, in rich woodlands. Wood singularly hard, close-grained and heavy, in use for levers and other implements.

Pistacia vera, L.

Indigenous in the Orient, as far as Persia. A deciduous tree, 30 feet high, yielding the Pistacia Nuts of commerce, remarkable for their green almond-like kernels. The likewise deciduous Mediterranean *Pistacia Terebinthus*, L., yielding the Chio Turpentine, the *P. Atlantica*, Desf., and the evergreen South European *Pistacia Lentiscus*, L., furnishing the mastix, grow rarely to the size of large trees.

Planera Japonica, Miquel.

Considered one of the best timber trees of Japan.

Platanus occidentalis, L.

The true Plane tree of the East part of North America. More eligible as an avenue tree, than as a timber tree; diameter of stem at times 14 feet; wood dull red.

Platanus orientalis, L.

The Plane tree of South Europe and Middle Asia. One of the grandest trees for lining roads and for street planting, deciduous like the other planes, rather quick of growth, and not requiring much water; attains a height of 90 feet. The wood is well adapted for furniture and other kinds of cabinet work.

Platanus racemosa, Nuttall.

The Californian Plane tree. Wood harder and thus more durable then that of P. occidentalis, also less liable to warp.

Populus alba, L.

The Abele or White Poplar of Europe and Middle Asia. Height 90 feet. It proved here an excellent avenue tree, even in comparatively waterless situations, and gives by the partial whiteness of its foliage a pleasing effect in any plantation. *Populus canescens*, Sm., the grey Poplar, is either a variety of the Abele or its hybrid with the Aspen, and yields a better timber for carpenters and millwrights.

Populus balsamifera, L.

The Tacamahac or Balsam Poplar, of the colder, but not the coldest parts of North America, 80 feet high. Its variety is *P. candicans*, Aiton.

Populus grandidentata, Michaux.

North America, 60 feet high. A kind of Aspen.

Populus heterophylla, L.

The downy Poplar of North America. Height 60 feet.

Populus monilifera, Aiton. (*P. Canadensis*, Desf.)

The Cottonwood tree of North America. Height 100 feet. One of the best poplars for the production of timber.

Populus nigra, L.

The European Black Poplar, extending spontaneously to China. It includes *Populus dilatata*, Aiton, or as a contracted variety, *P. fasti-*

giata, Desf., the Lombardy Poplar. Greatest height 150 feet. Growth rapid, like that of all other poplars. Wood soft, light and of loose texture, used by joiners, coopers and turners, furnishing also superior charcoal. Bark employed in tanning. The tree requires damp soil.

Populus tremula, L.

The European Aspen. Height 80 feet. It extends to Japan, where also a peculiar species, *Populus Sieboldii* (Miq.) exists. The aspenwood is white and tender, and in use by coopers and joiners.

Populus tremuloides, Michaux.

The North American Aspen. Height 50 feet. It extends west to California, where a particular species, *Pop. trichocarpa*, Torrey, occurs. All Poplars might be planted like all Willows, in our gullies, to intercept forest-fires, also generally on river-banks.

Quercus Ægilops, L.*

South Europe. A tree of the size of the British Oak. The cups, known as Valonia, used for tanning and dyeing; the unripe acorns as Camata or Camatena, for the same purpose. The wood is capital for furniture.

Quercus alba, L.*

The White or Quebec Oak. A most valuable timber tree, 100 feet high; diameter of stem, 7 feet. Wood in use by ship-builders, wheelwrights, coopers and other artisans.

Quercus annulata, Smith.

A large Oak of Nepal, which provides a very good timber.

Quercus aquatica, Walter.

North America. Height of tree 60 feet; it furnishes a superior bark for tanning, also wood for ship-building.

Quercus Cerris, L.

South Europe, of the height of the English Oak, in suitable localities of quick growth. The foliage deciduous, or also evergreen. The wood available for wheelwrights, cabinetmakers, turners, coopers; also for building purposes.

Quercus coccifera, L.

The deciduous Kermes Oak of South Europe; so called from the red dye, furnished by the *Coccus ilicis*, from this Oak. It also supplies tanner's bark. The huge and ancient Abraham's Oak belongs to this species.

Quercus coccinea, Wangenheim.

The Black Oak of North America. Height 100 feet; stem-diameter, 5 feet. Foliage deciduous. The yellow dye, known as Quercitron, comes from this tree. Bark rich in tannic acid.

Quercus cornea, Loureiro.

China. An evergreen tree, 40 feet high. Acorns used for food.

Quercus falcata, Michaux.

North America. Foliage deciduous. Lives in dry sandy ground. A good-sized tree with excellent tanner's bark.

Quercus Ilex, L.

The Holly Oak of South Europe. Height of tree 50 feet. Wood in use for ship-building, bark for tanning. From varieties of this tree are obtained the sweet and nourishing Ballota and Chesnut acorns.

Quercus incana, Roxb.

A Himalayan timber tree of great dimensions, beautiful, evergreen.

Quercus infectoria, Oliv.

Only a small tree, with deciduous foliage. Chiefly from this tree the galls of commerce are obtained.

Quercus lancifolia, Roxb.

A tall timber tree of the Himalayas. Wood valued for its durability.

Quercus macrocarpa, Michx.*

The Bur Oak of North America. Tree 70 feet high. The timber nearly as good as that of the White Oak.

Quercus palustris, Du Roi.

The Marsh Oak of North America. Height 80 feet; of quick growth The wood, though not fine-grained, is strong and tough.

Quercus Prinus, L.

The North American Swamp Oak. A tree, 90 feet high, available for wet localities. Foliage deciduous. Wood strong and elastic, of fine grain. A red dye is produced from the bark.

Quercus Robur, L.*

The British Oak, extending through a great part of Europe and Western Asia, attaining a great age and an enormous size. Extreme height 120 feet. Two varieties are distinguished: — 1. *Quercus sessiliflora,* Salisbury. The Durmast Oak, with a darker, heavier timber, more elastic, less fissile. This tree is also the quickest of the two in growth, and lives on poorer soil. Its bark is also richer in medicinal, dyeing and tanning principles. 2. *Quercus pedunculata,* Willd. This variety supplies most of the oak-timber in Britain for ship-building, and is the best for bending under steam. It is also preferred for joiner's work.

Quercus rubra, L.

The Red Oak of North America. Height 100 feet; diameter of stem 4 feet. The wood is not of value; but the bark is rich in tannin. Autumnal tint of foliage beautifully red.

Quercus semecarpifolia, Smith.

In the Himalayas. Height of tree often 100 feet; girth of stem 18 feet. It furnishes a first-class timber.

Quercus serrata, Thunberg.

One of the 23 known Japan Oaks. It yields the best food for the oak silkworm (*Bombyx Yamamai.*)

Quercus Sideroxylon, Humboldt.

Mountains of Mexico, at 8,000 feet elevation. An Oak of great size, of compact timber, almost imperishable in water. *Q. lanceolata, Q. chrysophylla, Q. reticulata, Q. laurina, Q. obtusata, Q. glaucescens, Q. Xalapensis* (Humb.) and *Q. acutifolia* (Nee), are among the many other highly important timber Oaks of the cooler regions of Mexico.

Quercus squamata, Roxburgh.

One of the tallest of the Himalayan Oaks. Wood lasting.

Quercus Suber, L.*

The Cork Oak of South Europe and North Africa; evergreen. It attains an age of fully 200 years. After about 20 years it can be stripped of its bark every 6 or 7 years; but the best cork is obtained from trees over 40 years old. Height of tree about 40 feet. Acorns of a sweetish taste.

Quercus Sundaica, Blume.

One of the oaks from the mountains of Java, where several other valuable timber oaks exist.

Quercus Toza, Bosc.

South Europe. One of the handsomest oaks, and one of the quickest of growth. Foliage evergreen.

Quercus virens, L.*

The Live Oak of North America, evergreen, 50 feet high. Supplies a most valuable timber for shipbuilding; it is heavy, compact, fine-grained; it is moreover the strongest and most durable of all American Oaks. Like *Q. obtusiloba*, Michaux., it lives also on seashores, helping to bind the sand, but it is then not of tall stature. Of many of the 300 Oaks of both the Western and Eastern portion of the Northern hemisphere, the properties remained unrecorded and perhaps unexamined; but it would be important to introduce as many kinds as possible for local test-growth. The acorns, when packed in dry moss, retain their vitality for some months. The species with deciduous foliage are not desirable for massive ornamental planting, because in this clime they shed their dead leaves tardily during the very time of our greatest verdure.

Rhus vernicifera, Cand.

Extends from Nepal to Japan. It forms a tree of fair size, and yields the Japan varnish.

Rhus succedanea, L.

The Japan Wax tree, the produce of which has found its way into the English market. The Sumach (*Rhus coriaria*, L.), and the Scotino (*Rhus Cotinus*, L.), both important for superior tanning and for dyeing, thrive here quite as well as in South Europe. They are more of shrubby growth.

Robinia Pseudacacia, L.

The North American Locust Acacia. Height to 90 feet. The strong hard and durable wood is for a variety of purposes in use, and particularly eligible for tree nails. The roots are poisonous. The allied Robinia viscosa attains a height of 40 feet.

Sassafras officinale, Hayne.

The deciduous Sassafras tree, indigenous from Canada to Florida, in dry open woods. Height 50 feet; leaves lobed; wood and bark medicinal, and used for the distillation of Sassafras oil.

Sophora Japonica, L.

A tree of China and Japan, resembling the Laburnum, up to 60 feet high; wood hard and compact, valued for turner's work. All parts of the plant purgative; the flowers rich in a yellow dye.

Salix alba, L.*

The Huntingdon or Silky Willow of Europe and Middle Asia. Height 80 feet, circumference of stem 20 feet; wood light and elastic, available for carpenter s work and implements, bark for tanning. The golden Osier (*Salix vitellina;* L.), is a variety. The shoots are used for hoops and wickerwork.

Salix Babylonica, Tournefort.

The Weeping Willow, indigenous from West Asia as far as Japan. Important for consolidating river banks.

Salix caprea, L.

The British Sallow or Hedge Willow; grows also to a tree; wood useful for handles and other implements, bark for tanning. It is the earliest flowering willow.

Salix cordata, Muehlenb.

One of the Osiers of North America.

Salix daphnoides, Villars.

Middle Europe and Northern Asia, as far as the Amoor. A tree of remarkable rapidity of growth, 12 feet in four years.

Salix fragilis, L.

The Crack Willow. Height 90 feet, stem to 20 feet in girth. A variety of this species is the Bedford Willow, *Salix Russelliana*, Smith, which yields a light elastic tough timber, more tannin in its bark than oak, and more salicine (a substitute for quinine) than most congeners.

Salix lanceolata, Smith.

One of the Basket Willows, cultivated in Britain.

Salix lucida, Muehlenb.

One of the Osiers of North America.

Salix purpurea, L.

Of wide range in Europe and West Asia. One of the Osiers.

Salix rubra, Hudson.

Throughout Europe, also in West Asia and North Africa; is much chosen for Osier beds. When cut down, it will make shoots 8 feet long in a season.

Salix triandra, L.* (*S. amygdalina*, L.)

The Almond Willow, through nearly all Europe and extratropical Asia. Height of tree 30 feet. Shoots 9 feet long, for hoops and white basket work, being pliant and durable.

Salix viminalis, L.*

The common Osier of Europe and North Asia, attains the height of 30 feet. One of the best for wicker-work and hoops; when cut it shoots up to a length of 12 feet. It would lead too far to enumerate even the more important willows all on this occasion. Professor Andersson, of Stockholm, admits 158 species. Besides these, numerous hybrids exist. Many of the taller of these willows could here be grown to advantage.

Tilia Americana, L.

The Basswood tree or North American Linden tree, growing to 52° North Latitude. Height of tree 80 feet, diameter of stem 4 feet; wood pale and soft. *Tilia heterophylla*, Vent., the Silver Lime of North America, and Tilia Manchurica, Rupr., of South Siberia might be tested.

Tilia Europæa, L.

The common Lime of Europe, extending naturally to Japan, the large leaved variety of South European origin. Height up to 120 feet, exceptionally 50 feet in girth. The wood pale, soft and close-grained, sought for turnery and carving; the bast excellent for mats.

Ulmus alata, Michx.

The Whahoo Elm of North America. Height of tree 80 feet; wood fine-grained,

Ulmus Americana, L.

The White Elm of North America, a tree fond of moist river banks, 100 feet high; trunk 60 feet, 5 feet in diameter.

Ulmus campestris, L.*

The ordinary Elm, indigenous to South Europe and temperate Asia, as far East as Japan. Several marked varieties, such as the Cork Elm and Wych Elm, exist. The Elm in attaining an age of several centuries becomes finally of enormous size. The wood is tough, hard, fine-grained and remarkably durable, if constantly under water; next to the Yew, it is the best of European woods, where great elasticity is required, as for archery bows. It is also used for keels, blocks and wheels. Bast tough.

Ulmus Floridana, Chapman.

The West Florida Elm, 40 feet high.

Ulmus fulva, Michx.

The Slippery or Red Elm of North America, 60 feet high; wood red, tenacious.

Ulmus racemosa, Thomas.

The Cork Elm of North America.

For fuller information on trees, long known, refer to Loudon's Classic "Arboretum;" also for many further details to Lindley's Treasury of Botany, to Asa Gray's Manual, to Nuttall's North American Sylva, to Lawson's Pinetum and many local works; also to the volumes of the Exhibitions of 1862 and 1867.

The trees marked with an asterisk * should receive prominent attention in Victorian woodculture. The dimensions given are the greatest, of which the writer could trace reliable records.

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